BMP Retrofit Pilot Project

Quarterly Status Report No. 11

BMP Retrofit Pilot Project –– District 7 and District 11

CTSW-RT-00-050 November 20, 2000

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APPENDICES:

INTRODUCTION

Background and Purpose

Periodic status reports and meetings are specified in the District 7 and District 11 Scoping Study as a means of updating NRDC, EPA, San Diego Baykeeper, and Santa Monica Baykeeper on the progress of the BMP Retrofit Pilot Program. The bi-weekly and quarterly status meetings have been scheduled on a regular basis to coincide with general project milestones and periods of significant activity. Approximate scheduled dates for the periodic status meetings are given in the *Scoping Study*. This report provides background documentation for the eleventh status meeting which will be held on December 14, 2000.

The scope of the status reports includes a general program-level overview of the activities that precede the status meetings. Status reports include information regarding the Pilot Program: (1) remaining/recently constructed BMP sites, (2) OMM activities and sampling/monitoring results, (3) vector and biological updates, and (4) other items pertaining to the pilot study. The program Master Schedule is contained in the *Scoping Study* for each District.

The preceding Status Meeting (No. 10) was held on September 20, 2000. The meeting minutes are included as Appendix A. The main subjects discussed at Status Meeting No. 10 included the following:

- Vector issues; larval monitoring/abatement update and DHS updates
- Adult mosquito monitoring report
- Overview of pilot program monitoring data
- Overview of CDS devices
- Mosquito elimination alternatives – CDS devices
- Final report discussion
- OMM Updates
- Overview of biofilters

The project calendar listing meetings and submittals scheduled for the next few months is included as Appendix H.

NON-STORMWATER RUNOFF INSPECTIONS

During the quarterly reporting period, occurrences of non-stormwater discharges were noted at three BMP sites during routine visits. Weekly inspections by the O&M crew were conducted for these sites. As agreed, weekly inspections are discontinued when no non-stormwater discharges are noted at the same sites during four subsequent weekly visits.

The following table summarizes when non-stormwater runoff was noted at the sites inspected. **Non-stormwater Weekly Inspections have been discontinued at all locations except those listed below. Should non-stormwater discharge be noted during routine inspections, weekly non-stormwater discharge inspection will resume at that location.**

Week of	Foothill MS DII	Altadena MS Strip/IT	Alameda MS OWS
August 14, 2000			Y
August 21, 2000			N
August 28, 2000			N
Sept. 4, 2000			N
Sept. 11, 2000			N
Sept. 18, 2000			-
October 2, 2000	Y		
October 9, 2000	N		
October 16, 2000	N	Y	
October 23, 2000	N	N	
October 30, 2000	N	N	
November 6, 2000	-	N	
November 13, 2000		N	

Y – Non-stormwater runoff was observed
N - No non-stormwater runoff observed during follow-up visit
- Discontinued weekly inspections.

ACTIVITY DESCRIBED IN THIS QUARTERLY REPORT COVERS THE PERIOD FROM AUGUST 24, 2000 THROUGH NOVEMBER 20, 2000

General Notes/Activities

During the past quarter, routine inspection and maintenance of the BMPs have been conducted. Biweekly updates have been held with the Plaintiffs and specific operational and program items were discussed during Biweekly Conference Calls. Discussion items pertaining to specific devices include: (1) mosquito-proofing CDS Units, (2) MID changes, (3) Vector Abatement and DHS survey, (4) Cerritos swale condition, (5) EDB and swale residence time calculations, (5) Final Report Preparation. Each specific issue is discussed in detail in this report.

Details on operation, monitoring, and maintenance of the BMPs during the past quarter are provided in this document. Other supporting details are included as appendices to this document.

District 7 BMP Pilot Sites

The teams mobilized for the following two storm events during this quarter: October 10-11 and 26-27. A summary of the last two events is provided below.

Table 1. District 7 October 11, 2000 Event

Site	BMP Type	Date of Sample Event	Rainfall Total	Mobilized	Sampled		% Storm Capture	Number of Aliquots	Empirical Observations
					Comp	Grab			
District 7									
I-605/SR-91	IB	10/11/00	0.25	Y	NA	NA	NA	NA	Y
I-210 East of Orcas	CDS	10/11/00	0.01	N	N	N	NA	NA	N
I-210 East of Filmore	CDS	10/11/00	0.00	N	N	N	NA	NA	N
I-5/I-605	EDB	10/11/00	0.09	N	Y[1]	N	NA	NA	N
I-605/SR-91	EDB	10/11/00	0.25	Y	Y[1]	N	NA	NA	Y
Alameda MS	OWS	10/11/00	0.13	N	N	N	NA	NA	N
Eastern MS	MF	10/11/00	0.00	N	N	N	NA	NA	N
Foothill MS	MF	10/11/00	0.04	N	N	N	NA	NA	N
Termination P & R	MF	10/11/00	0.27	Y[2]	N	N	NA	NA	N
Via Verde P & R	MCTT	10/11/00	0.01	N	N	N	NA	NA	N
Lakewood P & R	MCTT	10/11/00	0.24	Y	Y	N	>75,>75	>12,>12	Y
Altadena	Bio Strip	10/11/00	0.05	N	N	N	NA	NA	N
	Infiltration Trench	10/11/00	0.05	N	NA	NA	NA	NA	N
Foothill MS	DII north- SG Insert	10/11/00	0.04	N	Y[1]	NA	NA	NA	N
	DII south- FF Insert	10/11/00	0.04	N	Y[1]	NA	NA	NA	N

Site	BMP Type	Date of Sample Event	Rainfall Total	Mobilized	Sampled		% Storm Capture	Number of Aliquots	Empirical Observations
					Comp	Grab			
Las Flores MS	DII north-SG Insert	10/11/00	0.00	N	N	N	NA	NA	N
	DII south-FF Insert	10/11/00	0.00	N	N	N	NA	NA	N
Rosemead MS	DII north-FF Insert	10/11/00	0.13	Y	Y	NA	>75	9	Y
	DII south-SG Insert	10/11/00	0.13	Y	Y	NA	>75	>12	Y
I-605/SR-91	Bio Strip	10/11/00	0.25	Y	Y[3]	N	>75, NA	>12, NA	Y
	Bio Swale	10/11/00	0.25	Y	Y[3]	N	>75, NA	>12, NA	Y
Cerritos MS	Bio Swale	10/11/00	0.25	Y	Y[3]	N	>75, NA	>12, NA	Y
I-5/I-605	Bioswale	10/11/00	0.09	N	Y[1]	N	NA	NA	N
I-605/ Del Amo	Bioswale	10/11/00	0.25	Y	Y[3]	N	>75, NA	>12, NA	Y

[1] Not enough volume to sample
[2] Team mobilized but event was downgraded to "Unlikely". Sampling equipment turned off based on forecast.
[3] Influent sample collected; no effluent flow, thus no effluent sample

Table 2. District 7 October 26-27, 2000 Event

Site	BMP Type	Date of Sample Event	Rainfall Total	Mobilized	Sampled		% Storm Capture	Number of Aliquots	Empirical Observations
					Comp	Grab			
District 7									
I-605/SR-91	IB	10/26-27	2.01	Y	NA	NA	NA	NA	Y
I-210 East of Orcas	CDS	10/26-27	0.77	Y	N[1]	N	NA	NA	Y
I-210 East of Filmore	CDS	10/26-27	1.19	Y	Y	Y	>75,>75	>12,>12	Y
I-5/I-605	EDB	10/26-27	1.50	Y	Y	N	>75,>75	>12,>12	Y
I-605/SR-91	EDB	10/26-27	2.01	Y	Y	Y	>75,>75	>12,>12	Y
Alameda MS	OWS	10/26-27	0.31	Y	NA	Y	NA	NA	Y
Eastern MS	MF	10/26-27	1.25	Y	Y[2]	N	>75,NA	>12,NA	Y
Foothill MS	MF	10/26-27	0.78	Y	Y	N	>75,>75	>12,>12	Y
Termination P & R	MF	10/26-27	1.65	Y	Y	N	>75,>75[4]	>12,>12	Y
Via Verde P & R	MCTT	10/26-27	0.91	Y	Y	Y	>75,>75	>12,>12	Y
Lakewood P & R	MCTT	10/26-27	1.17	Y	Y	Y	>75,75	>12,>12	Y
Altadena	Bio Strip	10/26-27	0.57[3]	Y	Y	N	>75,>75	>12,>12	Y
	Infiltration Trench	10/26-27	0.57	Y	NA	NA	NA	NA	Y
Foothill MS	DII north- SG Insert	10/26-27	0.78	Y	Y	NA	>75	>12	Y
	DII south- FF Insert	10/26-27	0.78	Y	Y	NA	>75	>12	Y
Las Flores MS	DII north-SG Insert	10/26-27	2.13	Y	Y	NA	>75	>12	Y
	DII south-FF Insert	10/26-27	2.13	Y	Y	NA	>75	>12	Y
Rosemead MS	DII north-FF Insert	10/26-27	0.88	Y	Y	NA	>75	>12	Y
	DII south-SG Insert	10/26-27	0.88	Y	Y	NA	>75	>12	Y
I-605/SR-91	Bio Strip	10/26-27	2.01	Y	Y	Y	>75,>75	>12,>12	Y
	Bio Swale	10/26-27	2.01	Y	Y	Y	>75,>75	>12,>12	Y
Cerritos MS	Bio Swale	10/26-27	2.01	Y	Y	Y	>75,>75	>12,>12	Y

Site	BMP Type	Date of Sample Event	Rainfall Total	Mobilized	Sampled		% Storm Capture	Number of Aliquots	Empirical Observations
					Comp	Grab			
I-5/I-605	Bioswale	10/26-27	1.50	Y	Y	N	>75,>75	>12,>12	Y
I-605/ Del Amo	Bioswale	10/26-27	2.01	Y	Y	Y	>75,>75	>12,>12	Y

[1] Flow meter did not function properly; flow meter was subsequently fixed.
[2] Influent sample collected; effluent sample not collected because of BMP pump failure.
[3] 0.25-inch of un-forecasted rainfall occurred prior to sampling on 10/26/00.
[4] Power failure to effluent pump; sampling was stopped just prior to second storm event commingling with first storm event.

The following is a discussion of activities during the quarter for each BMP site.

I-605/SR-91 Interchange Infiltration Basin (Site ID 73101)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.25 inch of rainfall. A team was mobilized to make empirical observations of the infiltration basin.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 2.01 inch of rainfall. A team was mobilized to make empirical observations of the infiltration basin. Bypass occurred at the overflow structure because the depth of water passing through the overflow structure exceeded the bypass weir elevation.

Operations and Maintenance

9/6/00: Conducted monthly site inspection.

9/21/00: Cut erosion control vegetation, filled and compacted burrows and picked up trash and debris.

10/16/00: Conducted monthly site inspection.

11/7/00: Conducted monthly site inspection. Removed woody vegetation, filled and compacted burrows and picked up trash and debris.

Vector Activities

None this period.

Issues / Solutions

None.

I-210/East Orcas Avenue Continuous Deflection Separators (Site ID 73102)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.01 inch of rainfall. The team was authorized to mobilize and the stations were readied. However, the team was de-mobilized because the storm system was scattered in nature and was downgraded over time to an unlikely storm classification. No samples were collected and empirical observations were not made.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 0.77 inch of rainfall. A team was mobilized to make empirical observations of the CDS unit. No composite samples were collected due to a flow meter malfunction, and grab samples were not collected. The flow meter was subsequently fixed. A piece of foam debris partially blocked the weir box inlet to the CDS and caused debris to accumulate in the weir box and inlet pipe.

Operations and Maintenance

9/7/00: Conducted monthly site inspection.

10/3-5/00: CDS replaced the 1200 micron screen with a 2400 micron screen. A new sump basket, of the same type as previously, was installed.

10/17/00: Conducted monthly site inspection. Pushed debris from the weir box into the CDS unit.

11/2/00: Measured diameter of CDS unit in preparation for sealing the unit from vectors.

11/7/00: Conducted monthly site inspection. Pushed debris from the weir box into the CDS unit.

11/9/00: Mosquito screen was installed on the outlet pipe and holes in the CDS unit were filled to minimize mosquito entry.

Vector Activities

9/29/00: Abated with Altosid liquid

10/6/00: Abated with Altosid liquid

10/12/00: Abated with Altosid liquid

10/19/00: Abated with Altosid liquid

10/27/00: Abated with Altosid liquid

11/2/00: Abated with Altosid liquid

11/8/00: Abated with Altosid liquid

11/17/00: Abated with Altosid liquid

Issues / Solutions

A letter was received from CDS Technologies regarding the CDS units installed on the I-210, as part of the BMP Retrofit Pilots. CDS will no longer make the particular screen size used in the I-210 installations available due to experience with clogging that resulted in unreasonably high maintenance requirements. During 10/3-5/00, CDS replaced the 1200 micron screen with one with a 2400 micron screen. Although the 4700 micron screen was installed at Filmore and the 2400 micron screen was installed at Orcas, contrary to the original plan, CDS said that the screen sizes were appropriate for the sites. CDS provided a letter confirming this. According to CDS, the larger screen openings have less clogging potential and will be available in the future.

I-210/East of Filmore Street Continuous Deflection Separators (Site ID 73103)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.00 inch of rainfall. The team was authorized to mobilize and the stations were readied. However, the team was de-mobilized because the storm system was scattered in nature and was downgraded over time to an unlikely storm classification.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 1.19 inches of rainfall. A team was mobilized and composite and grab samples were collected at both the influent and the effluent locations and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made.

Operations and Maintenance

9/7/00: Conducted monthly site inspection.

10/3-5/00: CDS replaced the 1200 micron screen with a 4700 micron screen.

10/17/00: Conducted monthly site inspection. Pushed debris from the weir box into the CDS unit.

11/2/00: Measured diameter of CDS unit in preparation for sealing the unit from vectors.

11/6/00: Graffiti was removed from the site.

11/7/00: Conducted monthly site inspection. Pushed debris from the weir box into the CDS unit.

11/9/00: Mosquito screen was installed on the outlet pipe and holes in the CDS unit were filled to minimize mosquito entry.

Vector Activities

10/12/00: Abated with Altosid liquid

10/19/00 Abated with Altosid liquid

10/27/00: Abated with Altosid liquid

11/2/00: Abated with Altosid liquid

Issues / Solutions

A letter was received from CDS Technologies regarding the CDS units installed on the I-210, as part of the BMP Retrofit Pilots. CDS will no longer make the particular screen size used in the I-210 installations available due to experience with clogging that resulted in unreasonably high maintenance requirements. During 10/3-5/00, CDS replaced the 1200 micron screen with one with a 4700 micron screen. Although the 4700 micron screen was installed at Filmore and the 2400 micron screen was installed at Orcas, contrary to the original plan, CDS said that the screen sizes were appropriate for the sites. CDS provided a letter confirming this. According to CDS, the larger screen openings have less clogging potential and will be available in the future.

I-5/I-605 Extended Detention Basin (Site ID 74101)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.09 inch of rainfall. A team was authorized to mobilize and the stations were readied. However, the team was de-mobilized because the storm system was scattered in nature and was downgraded over time to an unlikely storm classification. There was not enough volume of composite sample to analyze. Empirical observations were not made.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 1.50 inches of rainfall. A team was mobilized and composite samples were collected at the influent location, and a few days later, at the effluent location and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made. The EDB reached flow volume capacity.

Operation and Maintenance

9/6/00: Conducted monthly site inspection.

9/20/00: Cut erosion control vegetation, removed woody vegetation within the BMP boundary, filled and compacted burrows and picked up trash and debris.

10/16/00: Conducted monthly site inspection.

11/6/00: Removed woody vegetation and trash.

11/7/00: Conducted monthly site inspection.

Vector Activities

9/29/00: Abated with Altosid liquid

10/6/00: Abated with Altosid liquid

10/12/00: Abated with Altosid liquid

10/19/00: Abated with Altosid liquid

10/27/00 Abated with Altosid liquid

11/2/00: Abated with Altosid liquid

11/8/00: Abated with Altosid liquid

11/17/00 Abated with Altosid liquid

Issues/Solutions

None this period.

I-605/SR-91 Extended Detention Basin (Site ID 74102)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.25 inch of rainfall. A team was mobilized to make empirical observations of the extended detention basin. There was not enough volume of composite sample at the influent location to analyze. No flow occurred through the effluent location, thus no effluent sample was collected.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 2.01 inches of rainfall. A team was mobilized and composite and grab samples were collected at the influent

location, and a few days later, at the effluent location and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made. The EDB reached flow volume capacity.

10/30/00: Drained water from behind monitoring weir.

11/3/00: Installed latches on the influent and effluent enclosures to make them easier to open.

11/8/00: Modified enclosures to prevent safety hazard.

Operation and Maintenance

9/6/00: Conducted monthly site inspection.

9/21/00: Removed woody vegetation within the BMP boundary, and filled and compacted burrows.

10/16/00: Conducted monthly site inspection.

11/7/00: Conducted monthly site inspection. Removed woody vegetation, compacted gopher burrows, backfilled squirrel holes and removed trash and debris.

11/9/00: Removed trash and debris from energy dissipater.

Vector Activities

None this period.

Issues/Solutions

None this period.

Paxton Maintenance Station Media Filter (Site ID 74103)

Metro Maintenance Station Multi-Chamber Treatment Train (Site ID 74104)

During the past quarter, the D7 processing and formatting of the Metro/Paxton packages have been completed. On November 15 the packages were submitted to Headquarters for review, processing, and advertisement. Changes have been made to the schedule. The estimated complete construction date is September 7, 2001.

Revised Schedule - Paxton/Metro Media Filter/MCTT:

Action	Duration	Milestone	Estimated Completion Date
Incorporate preliminary Structures and D7OE review comments		Submit entire PS&E package	03/08/00 (actual)
Structures and D7OE Review	4 weeks		
		Receive comments from Structures and D7OE	04/06/00 (actual)
Consultant revise PS&E	17.4 weeks		
		Submit to D7	08/07/00 (actual)
Structures final review and Final Revisions	2 weeks		
		Submit final to D7	08/21/00 (actual)
D7 process and format PS&E	12.3 weeks		
		D7 submit to HQ	11/15/00 (actual)
HQ review and processing; advertise contract	13 weeks		
		Advertise contract	02/20/01
Bid Period, evaluate bids, Award and Approval of Contract	12 weeks		
		Notice to Proceed	05/11/01
Construction	17 weeks		
		Construction complete	09/07/01
Install Instrumentation	2 weeks		
		Operational	09/21/01

Alameda Maintenance Station Oil Water Separator (Site ID 74201)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.13 inch of rainfall. A team was authorized to mobilize but the team was de-mobilized because the storm system was scattered in nature and was downgraded over time to an unlikely storm classification. No samples were collected and empirical observations were not made.

10/21/00: Trouble-shot telemetry equipment.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 0.31 inch of rainfall. A team was mobilized and grab samples were collected at both the influent and effluent locations and sent to the laboratory for analysis. Empirical observations were made.

Operation and Maintenance

9/7/00: Conducted monthly site inspection.

9/15/00: Placed sediment drum on pallet and covered with tarp.

9/21/00: Picked up trash and debris.

10/4/00: Removed graffiti from concrete post.

10/17/00: Conducted monthly site inspection.

10/25/00: Removed trash and debris.

11/7-8/00: Conducted monthly site inspection.

Vector Activities

None this period

Issues/Solutions

A revised Maintenance Indicator Document was issued on 10/19/00, which incorporated a change in frequency of sediment and oil inspection in the chambers of the Oil Water Separator from monthly to quarterly.

Eastern Regional Maintenance Station Media Filter (Site ID 74202)

Monitoring/Sampling Activities

8-9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.00 inch of rainfall. A team was authorized to mobilize and the stations were readied. However, the team was de-mobilized because the storm system was scattered in nature and was downgraded over time to an unlikely storm classification.

10/19-20/00:Trouble-shot telemetry equipment.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 1.25 inches of rainfall. A team was mobilized and a composite sample was collected at the influent location and sent to the laboratory for analysis. Influent sample met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. A representative composite sample was not collected at the effluent location because of pump failure. Empirical observations were made.

Operation and Maintenance

9/7/00: Conducted monthly site inspection.

9/22/00: Picked up trash and debris.

10/17/00: Conducted monthly site inspection.

10/30/00: LAW's subcontracted electrician confirmed that the pump was faulty and needed to be replaced. The electrician also found electrical wiring problems at the site.

10/31/00: The electrical wiring problems to the pump were fixed. Water was pumped from the BMP using a temporary pump.

11/1/00: A replacement pump was installed.

11/2/00: Replaced gravel bags around the perforated standpipe.

11/6/00: Conducted monthly site inspection.

11/16/00: Installed three additional gravel bags around the standpipe to cover the upper-most drain holes.

11/17/00: Removed a portion of the fence adjacent to the effluent sump, and installed a safety chain to provided safer access to the sump for servicing of the pump.

Vector Activities

9/29/00: Abated with Altosid liquid

10/6/00: Abated with Altosid liquid

10/12/00: Abated with Altosid liquid

10/19/00: Abated with Altosid liquid

10/27/00: Abated with Altosid liquid

11/2/00: Abated with Altosid liquid

Issues/Solutions

A revised Maintenance Indicator Document was issued on 10/19/00, which incorporated a change in frequency of trash and debris inspection at the inlet and outlet structures and on the media surface during the wet season, from weekly, to weekly during periods of extended wet weather (i.e. rain within the previous week of 0.10 inch).

Foothill Maintenance Station Media Filter (Site ID 74203)

Monitoring/Sampling Activities

8-9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.04 inch of rainfall. The team was authorized to mobilize and the stations were readied. However, the team was de-mobilized because the storm system was scattered in nature and was downgraded over time to an unlikely storm classification. No samples were collected and empirical observations were not made.

10/19-20/00:Trouble-shot telemetry equipment.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 0.78 inch of rainfall. A team was mobilized and composite samples were collected at the influent location, and a few days later, at the effluent location, and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made. The perforated stand pipe became blocked with debris. Debris was subsequently removed to allow flow into the sand filter.

11/14/00: Repaired door on the influent enclosure.

Operation and Maintenance

9/7/00: Conducted monthly site inspection. Removed trash and debris.

10/17/00: Conducted monthly site inspection.

10/25/00: Removed trash and debris.

10/30/00: LAW's subcontracted electrician inspected the electrical panel and found that there were electrical wiring problems.

11/1/00: The electrical wiring problems were fixed.

11/2/00: Replaced gravel bags around the perforated standpipe.

11/6/00: Conducted monthly site inspection.

11/14/00: Pulled weeds from filter media. Installed two additional gravel bags around the standpipe to cover the upper-most drain holes.

Vector Activities

10/2/00: Abated with Altosid pellets

Issues/Solutions

A revised Maintenance Indicator Document was issued on 10/19/00, which incorporated a change in frequency of trash and debris inspection at the inlet and outlet structures and on the media surface during the wet season, from weekly, to weekly during periods of extended wet weather (i.e. rain within the previous week of 0.10 inch).

Termination Park and Ride Media Filter (Site ID 74204)

Monitoring/Sampling Activities

8-9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.27 inch of rainfall. The team was authorized to mobilize and the stations were readied. However, the equipment was turned off because the storm system was scattered in nature and was downgraded over time to an unlikely storm classification. No samples were collected and empirical observations were not made.

10/17/00: Installed modems and cell phones.

10/21/00: Trouble-shot telemetry equipment.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 1.65 inches of rainfall. A team was mobilized and composite samples were collected at the influent location, and a few days later, at the effluent location, despite power failure to the effluent pump, and sent to the laboratory for analysis. Sampling at the effluent location was halted prior to a second storm event commingling with the first storm event. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made. Because there was a power failure to the pump, the Sand Filter reached flow volume capacity and subsequent flow bypass occurred. The pump was operated to drain the BMP during daylight hours when there was adequate power.

Operation and Maintenance

9/6/00: Conducted monthly site inspection.

9/19/00: Brown and Caldwell replaced the pump as a precautionary measure. The pump was tested during daylight hours and was functional.

9/21/00: Picked up trash and debris.

10/3/00: Water from a September storm event was pumped from the Sand Filter until a power failure occurred. Attempted to troubleshoot the problem. Problem was not solved.

10/6/00: LAW's subcontracted electrician tested the operation of the pump under load, while the Park and Ride lights were on.

10/16/00: LAW's subcontracted electrician and a Caltrans District 7 electrician met to discuss options to improve power to the pump. Conducted monthly site inspection.

10/30/00: Picked up trash and debris.

11/2/00: Replaced gravel bags around the perforated standpipe.

11/7/00: Conducted monthly site inspection.

11/9-10/00: Began installing new power source.

11/16/00: Installed three additional gravel bags around the stand-pipe to cover the upper-most drain holes. Caltrans electrician inspected and approved the new power source. Caltrans electrician will prepare a letter that requests Southern California Edison to make the final source connection.

11/17/00: Removed a portion of the fence adjacent to the effluent sump, and installed a safety chain to provide safer access to the sump for servicing of the pump.

Vector Activities

9/29/00: Abated with Altosid liquid

10/6/00: Abated with Altosid liquid

Issues/Solutions

1) During storms, there was found to be a lack of power to the site during night time hours i.e., while the Park and Ride lights were on. On 10/6/00, LAW's subcontracted electrician determined that the operational amperage was running too close to the limits of the 20 amp circuit breaker. The power was too low, which causes inefficiency in the pumps and the motors to burn out prematurely. On 10/16/00, LAW's subcontracted electrician and a Caltrans District 7 electrician met to discuss options to improve power to the pump. The solution decided upon is as follows:

   Install 100 amp 120/240/single phase/3w temporary 25 ft pole with overhead feed and make connections to existing meter pedestal.

2) A revised Maintenance Indicator Document was issued on 10/19/00, which incorporated a change in frequency of trash and debris inspection at the inlet and outlet structures and on the media surface during the wet season, from weekly, to weekly during periods of extended wet weather (i.e. rain within the previous week of 0.10 inch).

Via Verde Park and Ride MCTT (Site ID 74206)

Post-Construction Design Update

Design, bid, fabrication, and installation of a cover for the MCTT continues. An invitation to bid was sent to prospective vendors on 11/6/00. Bids are required back by 12/4/00. Estimated schedule is shown below.

MCTT Cover Design - Preliminary Schedule

Activity	Duration (weeks)	Estimated Completion Date
Law Crandall sends out bid package	-	11/6/2000
Award bid	-	12/4/2000
Cover manufacturer drafts and submits cover plans to Law Crandall	2	12/18/2000
Law Crandall provides comments on plans to manufacturer	1-2	12/27/2000
Manufacturer fabricates and delivers covers	7-8	2/19/2001
Covers are installed (weather permitting)	1	2/27/2001

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.01 inch of rainfall. The team was authorized to mobilize and the stations were readied. However, the team was de-mobilized because the storm system was scattered in nature and was downgraded over time to an unlikely storm classification. No samples were collected and empirical observations were not made.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 0.91 inch of rainfall. A team was mobilized and composite and grab samples were collected at the influent location, and a few days later, at the effluent location, and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made. It was noted that flow from the transfer pump tended to concentrate in a localized area within the sand filter.

Operation and Maintenance

9/7/00: Conducted monthly site inspection.

9/22/00: Picked up trash and debris.

10/5/00: LAW's subcontracted electrician tested the operation of the pumps under load, while the Park and Ride lights were on. The pumps functioned normally.

10/17/00: Conducted monthly site inspection.

10/18/00: Dimensions of the grit chamber were measured, so that modifications could be planned.

10/24/00: The grit chamber was modified to allow easier sampling access for Vector Control District personnel. The plastic packing balls were removed and containerized in 55-gallon drums. The grated floor was hinged with stainless steel hinges and fasteners, and a 0.22-inch polyethylene mesh screen was attached to the floor using nylon zip ties. Additionally, the bottom float in the sand filter sump was secured.

11/6/00: Conducted monthly site inspection. Removed trash and debris.

Vector Activities

10/2/00: Abated with Altosid pellets

10/30/00: Abated with Altosid liquid

11/9/00: Abated with Altosid pellets

Issues/Solutions

A revised Maintenance Indicator Document (MID) was issued on 10/19/00, which incorporated a change in frequency of trash and debris inspection at the inlet and outlet structures and the MCTT during the wet season, from weekly, to weekly during periods of extended wet weather (i.e. rain within the previous week of 0.10 inch). Also, the requirement in the MID to renew the Altosid briquettes every three months was removed.

Lakewood Park and Ride MCTT (Site ID 74206)

Post-Construction Design Update

Design, bid, fabrication, and installation of a cover for the MCTT continues. An invitation to bid was sent to prospective vendors on 11/6/00. Bids are required back by 12/4/00. Estimated schedule is shown below.

MCTT Cover Design - Preliminary Schedule

Activity	Duration (weeks)	Estimated Completion Date
Law Crandall sends out bid package	-	11/6/2000
Award bid	-	12/4/2000
Cover manufacturer drafts and submits cover plans to Law Crandall	2	12/18/2000
Law Crandall provides comments on plans to manufacturer	1-2	12/27/2000
Manufacturer fabricates and delivers covers	7-8	2/19/2001
Covers are installed (weather permitting)	1	2/27/2001

Monitoring/Sampling Activities

8-9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.24 inch of rainfall. A team was mobilized and composite samples were collected at the influent location, and a few days later, at the effluent location, and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made. There was a lack of power to the site during night time hours (i.e., while the Park and Ride lights were on). Because of the lack of power, the pumps could not be run simultaneously and had to be toggled on and off.

10/17/00: Installed telemetry equipment.

10/21/00: Trouble-shot telemetry equipment.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 1.17 inches of rainfall. A team was mobilized and composite and grab samples were collected at the influent location, and a few days later, at the effluent location, and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made. Observations of note were that the flow volume capacity was reached and subsequent flow bypass occurred. Also, flow from the transfer pump tended to concentrate in a localized area within the sand filter.

Operation and Maintenance

9/6/00 Conducted monthly site inspection.

9/21/00: Removed trash and debris.

10/6/00: LAW's subcontracted electrician tested the operation of the electric pumps under load, while the Park and Ride lights were on.

10/16/00: LAW's subcontracted electrician and a Caltrans District 7 electrician met to discuss options to improve power to the pumps. Conducted monthly site inspection.

10/18/00: Dimensions of the grit chamber were measured, so that modifications could be planned.

10/24/00: The grit chamber was modified to allow easier sampling access for Vector Control District personnel. The plastic packing balls were removed and containerized in 55-gallon drums. The grated floor was hinged with stainless steel hinges and fasteners, and a 0.22-inch polyethylene mesh screen was attached to the floor using nylon zip ties.

10/30/00: Removed trash and debris.

11/7/00: Conducted monthly site inspection. Removed trash and debris.

11/14/00: Water from an 11/11/00 rain event was pumped through the sand filter to an elevation of 1 foot above the settling tubes.

Vector Activities

9/13/00: Abated with Altosid liquid

10/6/00: Abated with Altosid liquid

10/12/00: Abated with Altosid liquid

10/19/00: Abated with Altosid liquid

10/27/00: Abated with Altosid liquid

11/2/00: Abated with Altosid liquid

11/8/00: Abated with Altosid liquid

11/17/00: Abated with Altosid liquid

Issues/Solutions

1. There was found to be a lack of power to the site especially during night time hours (i.e., while the Park and Ride lights were on). While initially draining the MCTT after the 11 October 2000 storm event, the transfer and effluent pumps were operating simultaneously. After approximately 12 minutes of operation, the effluent pump stopped pumping because it began to overheat from the lack of necessary power. From that point on, both pumps would not operate at the same time. Consequently, the transfer pump was operated when the effluent

pump was off and the effluent pump was operated when the transfer pump was off. On 10/6/00, LAW's subcontracted electrician determined that the operational amperage was running too close to the limits of the 20 amp circuit breakers. The power is too low, which will cause inefficiency in the pumps and the motors to burn out prematurely. On 10/16/00, LAW's subcontracted electrician and a Caltrans District 7 electrician met to discuss options to improve power to the pumps. The short term solution is to operate the pumps during daylight hours to minimize the impact of power problems.

2. A revised Maintenance Indicator Document (MID) was issued on 10/19/00, which incorporated a change in frequency of trash and debris inspection at the inlet and outlet structures and the MCTT during the wet season, from weekly, to weekly during periods of extended wet weather (i.e. rain within the previous week of 0.10 inch). Also, the requirement in the MID to renew the Altosid briquettes every three months was removed.

Altadena Maintenance Station Bio Strip and Infiltration Trench (Site ID 73211 a, b)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.05 inch of rainfall. The team was authorized to mobilize and the stations were readied. However, the team was de-mobilized because the storm system was scattered in nature and was downgraded over time to an unlikely storm classification. No samples were collected and empirical observations were not made.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 0.57 inch of rainfall. 0.25 inch of un-forecasted rainfall occurred prior to sampling on 10/26/00. A team was mobilized and composite samples were collected at both the influent and the effluent locations and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made.

Operations and Maintenance

9/7/00: Conducted monthly site inspection.

9/20/00: The spreader ditch plug was reinstalled in preparation for the wet season.

9/28/00: Inspected and drained spreader ditch, following a weekend storm event.

10/12/00: Inspected and drained spreader ditch, following the 10/11/00 storm event.

10/18/00: Conducted monthly site inspection.

10/20/00: Inspected and drained spreader ditch, following the non-stormwater runoff observed on 18 October 2000 during routine monthly inspections.

10/25/00: Removed weeds greater than 12 inches tall and picked up trash and debris.

10/31/00: Inspected and drained spreader ditch, following the 10/26-27/00 storm event.

11/7/00: Conducted monthly site inspection.

11/9/00: Removed weeds greater than 12 inches tall.

Vector Activities

None this period.

Issues / Solutions

None this period.

Foothill Maintenance Station Drain Inlet Insert (StreamGuard and Fossil Filter Inserts) (Site ID 73216 a, b)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/9/00: Conducted pre-storm inspection of monitoring equipment.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.04 inch of rainfall. A team was authorized to mobilize and the stations were readied. However, the team was de-mobilized because the storm system was scattered in nature and was downgraded over time to an unlikely storm classification. There was not enough volume of composite sample to analyze. Empirical observations were not made.

10/19-20/00:Trouble-shot telemetry equipment.

10/20/00: Fixed distributor arm at the Stream Guard DII.

10/26/00: Conducted pre-storm inspection of monitoring equipment. Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 0.78 inch of rainfall. A team was mobilized and composite samples were collected at both the Fossil Filter and StreamGuard DII locations and sent to the laboratory for analysis. Both samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to

run the entire analytical suite. Empirical observations were made. The Fossil Filter DII was cleaned once during the storm event.

11/14/00: Repaired rubber berm around effluent sampling chamber at Fossil Filter location.

Operations and Maintenance

9/14/00: Installed new Fossil Filter adsorbent material and StreamGuard DII for the wet season.

9/25/00: Performed inspection following unexpected rain event on 9/22/00. Removed sediment, trash and organic debris from the Fossil Filter DII.

10/5/00: A diesel spill occurred at Foothill Maintenance Station. A Caltrans employee had started a motor to an "arrow board" up-slope of the Fossil Filter DII, in order to charge its battery by running the engine (unattended) for awhile. The fuel line to the arrow board engine broke while the engine was running. Another employee noticed that diesel fuel was running along the gutter and into the Fossil Filter DII, and subsequently shut off the engine. Approximately 6 gallons of fuel leaked into the BMP. Caltrans soaked up the diesel fuel using a super-fine absorbent material on the asphalt and within the BMP. The Fossil Filter DII was removed and the Fossil Filter adsorbent material was disposed of with the diesel fuel. The fuel had drained through the subsurface pipe to the monitoring vault. The Palmer-Bowlus flume apparently prevented the fuel from entering the storm drain. Caltrans placed a barrier at this point to prevent fuel from entering the storm drain. A high pressure steam cleaner was used to wash down the concrete/asphalt pavement, the Fossil Filter DII, the drain inlet, and, as much as possible, the concrete pipe connecting the drain inlet to the monitoring vault. A vacuum truck was used to vacuum out the fuel and rinse water as it entered this chamber. Steam cleaning was continued until there was no longer an oil sheen in the rinse water. No detergents were used during the cleaning, only high-pressure steam. Law Crandall personnel were not present to observe the cleaning of the BMP, but arrived on site later to record cleanup activities. A very slight oil sheen was observed by Law Crandall at the bottom of the inlet box, in one small puddle. The Fossil Filter DII cartridges appeared to be adequately clean so new adsorbent material was replaced and the DII was reinstalled.

10/9/00: Conducted pre-storm inspection of DIIs.

10/17/00: Conducted monthly site inspection. No oily sheen was observed at the Fossil Filter DII. Debris and trash were removed from the Fossil Filter DII.

10/26/00: Conducted pre-storm inspection of DIIs. Trash, debris and sediment were removed from the Fossil Filter DII.

10/31/00: Conducted post-storm inspections of DIIs. Debris and sediment were removed from the Fossil Filter DII.

11/6/00: Conducted monthly site inspection. Trash and debris were removed from the Fossil Filter DII.

Vector Activities

None this period.

Issues / Solutions

None this period.

Las Flores Maintenance Station Drain Inlet Insert (StreamGuard and Fossil Filter Inserts) (Site ID 73217 a, b)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/10/00: Conducted pre-storm inspection of monitoring equipment.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.00 inch of rainfall. A team was authorized to mobilize and the stations were readied. However, the team was de-mobilized because the storm system was scattered in nature and was downgraded over time to an unlikely storm classification.

10/25/00: Repaired rubber berm around effluent sampling chamber.

10/26/00: Conducted pre-storm inspection of monitoring equipment. Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 2.13 inches of rainfall. A team was mobilized and composite samples were collected at both the Fossil Filter and StreamGuard DII locations and sent to the laboratory for analysis. Both samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made. The StreamGuard DII slipped slightly into the drain inlet. Flow bypass occurred at the Fossil Filter location and was cleaned once during the storm event.

11/2/00: Conducted pre-storm inspection of monitoring equipment.

11/15/00: Repaired rubber berm around effluent sampling chamber at both DII locations.

Operations and Maintenance

9/14/00: Installed new Fossil Filter adsorbent material and the StreamGuard DII for the wet season.

9/25/00: Performed inspection following unexpected rain event on 9/22/00.

10/10/00: Conducted pre-storm inspections of DIIs.

10/18/00: Conducted monthly site inspection. Debris was removed from the Fossil Filter DII.

10/26/00: Conducted pre-storm inspection of DIIs. Debris was removed from the Fossil Filter DII.

10/31/00: Conducted post-storm inspections of DIIs. Debris was removed from the Fossil Filter DII.

11/2/00: Conducted pre-storm inspection of DIIs.

11/7/00: Conducted monthly site inspection. Trash and debris were removed from the Fossil Filter DII.

11/15/00: Repaired rubber berm at both locations and readjusted the Stream Guard DII

Vector Activities

None this period.

Issues / Solutions

None this period

Rosemead Maintenance Station Drain Inlet Insert (StreamGuard and Fossil Filter Inserts) (Site ID 73218 a, b)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/9/00: Conducted pre-storm inspection of monitoring equipment.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.13 inch of rainfall. A team was mobilized and composite samples were collected at both the Fossil Filter and StreamGuard DII locations and sent to the laboratory for analysis. Only the StreamGuard sample met both the minimum percent storm capture and minimum number of aliquots. Minimum percent storm capture was achieved at the Fossil Filter location but only nine aliquots were successfully collected. However, enough volume was collected at both sites to run the entire analytical suite. Empirical observations were made. No flow was observed while at either site. Leaves and trash were removed from the Fossil Filter DII.

10/19/00: Trouble-shot telemetry equipment.

10/26/00: Conducted pre-storm inspection of monitoring equipment. Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 0.88 inch of rainfall. A team was mobilized and composite

samples were collected at both the Fossil Filter and StreamGuard DII locations and sent to the laboratory for analysis. Both samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made. Flow bypass occurred at the StreamGuard and Fossil Filter locations, and the StreamGuard DII slipped slightly into the drain inlet. The Fossil Filter DII was cleaned once during the storm event.

Operations and Maintenance

9/14/00: Installed new Fossil Filter adsorbent material and the StreamGuard DII for the wet season.

9/25/00: Performed inspection following unexpected rain event on 9/22/00. Removed trash and organic debris from the Fossil Filter DII.

10/9/00: Conducted pre-storm inspections of DIIs. Trash and debris were removed from the Fossil Filter DII.

10/17/00: Conducted monthly site inspection. Sediment, trash and debris were removed from the Fossil Filter insert.

10/26/00: Conducted pre-storm inspection of DIIs.

10/30/00: Conducted post-storm inspections of DIIs. Debris was removed from the Fossil Filter insert.

11/6/00: Conducted monthly site inspection. Trash and debris were removed from the Fossil Filter DII.

11/14/00: Readjusted the Stream Guard DII and inserted additional shims to keep it in place.

Vector Activities

None this period.

Issues / Solutions

None this period.

I-605/SR-91 Interchange Bio Strip & Swale (Site ID 73222 a, b)

Monitoring/Sampling Activities

Strip:

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.25 inch of rainfall. A team was mobilized and a composite sample was collected at the influent location only and sent to the laboratory for analysis. No flow occurred at the effluent location. The influent sample met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made but no grab samples were collected. No flow was observed while on site.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 2.01 inches of rainfall. A team was mobilized and composite and grab samples were collected at both the influent and the effluent locations and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made. Flow bypass to the concrete swale on the north end of the Strip occurred because of intense flow into the Strip.

Swale:

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.25 inch of rainfall. A team was mobilized and a composite sample was collected at the influent location only and sent to the laboratory for analysis. No flow occurred at the effluent location. The influent sample met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made but no grab samples were collected. No flow was observed while on site.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 2.01 inches of rainfall. A team was mobilized and composite and grab samples were collected at both the influent and the effluent locations and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made.

Operations and Maintenance

Strip:

9/6/00: Conducted monthly site inspection.

9/20/00: Removed weeds greater than 12 inches tall, compacted gopher burrows and picked up trash and debris.

10/16/00: Conducted monthly site inspection.

10/18/00: Measured work zone and determined the number and location of traffic channelizers required.

11/3/00: Removed trash and debris.

11/7/00: Conducted monthly site inspection.

11/9/00: Installed traffic channelizers and removed trash and debris.

Swale:

9/6/00: Conducted monthly site inspection.

9/20/00: Removed eroded hillside sediment from one corner of the energy dissipater. Removed weeds greater than 12 inches tall, filled and compacted burrows and picked up trash and debris.

10/16/00: Conducted monthly site inspection.

11/3/00: Backfilled and compacted burrows and picked up trash and debris.

11/7/00: Conducted monthly site inspection.

11/10/00: Removed weeds greater than 12 inches tall and filled and compacted burrows.

Vector Activities

None this period.

Issues / Solutions

None this period.

Cerritos Maintenance Station Bio Swale (Site ID 73223)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.25 inch of rainfall. A team was mobilized and a composite sample was collected at the influent location only and

sent to the laboratory for analysis. No flow occurred at the effluent location. The influent sample met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made but no grab samples were collected. No flow was observed while on site. Erosion had occurred along the subsurface gopher mesh, near the influent end of the swale.

10/21/00: Trouble-shooted telemetry equipment.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 2.01 inches of rainfall. A team was mobilized and composite and grab samples were collected at both the influent and the effluent locations and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made. Some flow bypass occurred through gopher holes damaging the side slope.

11/8/00: Repaired influent door on the enclosure.

Operations and Maintenance

9/6/00: Conducted monthly site inspection.

9/20/00: Removed weeds greater than 12 inches tall, compacted gopher burrows, backfilled squirrel holes and removed trash and debris.

10/16/00: Conducted monthly site inspection.

11/3/00: The side slope was repaired by compacting additional fill material into it. Removed trash and debris.

11/7/00: Conducted monthly site inspection.

11/8/00: The side slope was seeded and an erosion control blanket installed.

Vector Activities

None this period.

Issues / Solutions

Flow bypass was observed at the Cerritos Maintenance Station Swale, during storms. Flow bypass occurred through gopher burrows despite installation of the hardware mesh, although the number of gopher burrows appears to have reduced.

I-5/I-605 Bio Swale (Site ID 73224)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.09 inch of rainfall. A team was authorized to mobilize and the stations were readied. However, the team was de-mobilized because the storm system was scattered in nature and was downgraded over time to an unlikely storm classification. There was not enough volume of composite sample to analyze. Empirical observations were made after the storm event.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 1.50 inches of rainfall. A team was mobilized and composite samples were collected at both the influent and the effluent locations and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made.

Operations and Maintenance

9/6/00: Conducted monthly site inspection.

9/19/00: Removed weeds greater than 12 inches tall, compacted gopher burrows, backfilled squirrel holes and removed trash and debris.

10/16/00: Conducted monthly site inspection.

11/7/00: Conducted monthly site inspection. Removed weeds greater than 12 inches tall, backfilled and flattened burrows and picked up trash.

Vector Activities

None this period.

Issues / Solutions

None this period.

I-605/Carson & Del Amo Bio Swale (Site ID 73225)

Monitoring/Sampling Activities

9/00: Installed and calibrated monitoring equipment. Installed new decontaminated Teflon tubing.

9/26/00: During a routine maintenance visit, Law personnel discovered that the door to the influent enclosure had been torn off. However, all the equipment was present, and found to be in good working order.

9/27/00: Repaired door to influent enclosure.

10/11/00: Forecast predicted rain to produce 0.15 – 0.70 inch of rainfall, with a 60% probability of occurrence. Storm event produced 0.25 inch of rainfall. A team was mobilized and a composite sample was collected at the influent location only and sent to the laboratory for analysis. No flow occurred at the effluent location. The influent sample met both the minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made but no grab samples were collected. No flow was observed while on site.

10/26/00: Forecast predicted rain to produce 0.25 – 0.75 inch of rainfall, with a 70% probability of occurrence. Storm event produced 2.01 inches of rainfall. A team was mobilized and composite and grab samples were collected at both the influent and the effluent locations and sent to the laboratory for analysis. Influent and effluent samples met minimum percent storm capture and minimum number of aliquots, and enough volume was collected to run the entire analytical suite. Empirical observations were made.

Operations and Maintenance

9/6/00: Conducted monthly site inspection.

9/26-27/00: Removed weeds greater than 12 inches tall and woody vegetation from the swale, cut weeds on the slopes and removed trash and debris.

10/16/00: Conducted monthly site inspection.

11/3/00: Removed trash and debris.

11/7/00: Conducted monthly site inspection.

Vector Activities

None this period.

Issues / Solutions

None this period.

District 11 BMP Pilot Sites

Monitoring Activities Applicable to all sites

During the month of October, two storm events were monitored in District 11. Rainfall, percent capture, and sample aliquot numbers are provided in the tables below for each monitored storm event.

During the October 26, 2000 storm event the influent sampler at La Costa Wet Basin and the influent flow meter at Palomar Swale malfunctioned, thus no samples were sent to laboratory for analysis from either site. At La Costa Sand Filter, 16 hours after the first mass of rainfall, an additional 0.25-inches of rain fell while the effluent was still running. This dropped the percent capture from 100% to 43%. The influent sample had been removed earlier in order to meet chemical analysis holding times.

Table 1: Event #1

Site	BMP Type	Date of Sampling Event	Rainfall Total	Mobilized	Sampled		% Storm Capture	Number of Aliquots	Empirical Observations
					Comp	Grab			
District 11									
I-5/SR-56	EDB	10/26/00	0.38	Y	Y	Y	>75	>12	Y
I-15/SR-78	EDB	10/26/00	0.07	Y	N [1]	N	NA	NA	Y
I-5/La Costa (West)	IB	10/26/00	0.51	Y	NA	NA	NA	NA	Y
I-5/La Costa (East)	WB	10/26/00	0.60	Y	N [2]	N	NA	NA	Y
I-5/Manchester	EDB	10/26/00	0.59	Y	Y	Y	>75	>12	Y
Kearny Mesa MS	StormFilter	10/26/00	0.41	Y	Y	Y	>75	>12	Y
Escondido MS	MF	10/26/00	0.07	Y	Y [3]	Y	>75	11	Y
La Costa P & R	MF	10/26/00	0.58	Y	Y	Y	>75 [4]	>12	Y
SR-78/I-5 P& R	MF	10/26/00	0.38	Y	Y	Y	>75	>12	Y
Melrose Ave/SR-78	Bio Swale	10/26/00	0.27	Y	Y [3]	Y	>75	>12	Y
I-5 Palomar Airport Rd	Bio Swale	10/26/00	0.24	Y	N [5]	N	NA	NA	Y
Carlsbad MS	Bio Strip	10/26/00	0.22	Y	N [3]	N	NA	NA	Y
	Infiltration Trench	10/26/00	0.22	Y	Y	Y	>75	>12	Y

[1] Insufficient flow at influent; no flow at effluent
[2] Composite sample not collected due to sampler failure at influent
[3] Influent sample only; no flow at effluent
[4] Influent percent capture was 100% but dropped to 43% due to late rain
[5] Composite sample not collected due to flow meter failure; no flow at effluent

Significant rainfall intensities were encountered during the October 29, 2000 storm event. Samples from Kearny Mesa Maintenance Station, La Costa Sand Filter, and Palomar Swale were not sent to the laboratory for analysis due to influent equipment being overwhelmed by intense rainfall. At La Costa Wet Basin the influent sampler malfunctioned and at I-5/SR-56 the effluent flow meter malfunctioned, thus no samples were sent to laboratory for analysis from either site.

Table 2: Event #2									
Site	BMP Type	Date of Sampling Event	Rainfall Total	Mobilized	Sampled		% Storm Capture	Number of Aliquots	Empirical Observations
					Comp	Grab			
District 11									
I-5/SR-56	EDB	10/29/00	0.47	Y	N [1]	N	NA	NA	Y
I-15/SR-78	EDB	10/29/00	0.69	Y	Y	N	>75	>12	Y
I-5/La Costa (West)	IB	10/29/00	1.49	Y	NA	NA	NA	NA	Y
I-5/La Costa (East)	WB	10/29/00	1.51	Y	N [2]	N	NA	NA	Y
I-5/Manchester	EDB	10/29/00	0.39	Y	Y	N	>75	>12	Y
Kearny Mesa MS	StormFilter	10/29/00	0.70	Y	N [3]	N	NA	NA	Y
Escondido MS	MF	10/29/00	0.70	Y	Y	N	>75	>12	Y
La Costa P & R	MF	10/29/00	1.39	Y	N [3]	N	NA	NA	Y
SR-78/I-5 P& R	MF	10/29/00	1.15	Y	Y	N	>75	>12	Y
Melrose Ave/SR-78	Bio Swale	10/29/00	0.79	Y	Y [4]	N	>75	>12	Y
I-5 Palomar Airport Rd	Bio Swale	10/29/00	0.98	Y	N [3]	N	NA	NA	Y
Carlsbad MS	Bio Strip	10/29/00	0.81	Y	Y	N	>75	>12	Y
	Infiltration Trench	10/29/00	0.81	Y	Y	N	>75	>12	Y

[1] Composite sample not collected due to flow meter failure at effluent
[2] Composite sample not collected due to sampler failure at influent
[3] Significant rain intensities overwhelmed BMP
[4] Influent sample only; no flow at effluent

Maintenance Activities Applicable to all sites

None this period.

Vector Activities Applicable to all sites

County of San Diego Vector Control performed inspections on 8/29/00, 9/6/00, 9/11/00, 9/18/00, 9/25/00, 10/2/00, 10/9/00, 10/17/00, 10/23/00, 10/30/00, 11/6/00, 11/13/00 and 11/21/00.

I-5/SR-56 Extended Detention Basin (Site ID 111101)

Monitoring/Sampling Activities

9/19/00: Installed clean teflon and peristaltic sampler tubing and intake strainers.

9/25/00: Checked programs and calibrated flow meters and samplers. Conducted final monitoring station readiness inspection prior to storm season

10/10/00: National Weather Service (NWS) forecast predicted 80% chance of 0.20 to 0.30 inches of rain. Monitoring crews were mobilized. Storm event only produced 0.08 inches of rainfall. No samples were taken due to insufficient flow.

10/26/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain. Monitoring crews were mobilized. Samples were collected at both the influent and effluent stations and sent to the laboratory for analysis.

10/29/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain and then later downgraded to 50% chance of 0.25 to 0.50 inches of rain. Monitoring crews were mobilized. No samples were sent to the laboratory due to flow meter failure at the effluent.

11/10/00: NWS forecast predicted 70% chance of up to 0.25 inches of scattered rainfall. Monitoring crews were not mobilized. Storm event only produced 0.04 inches of rainfall.

11/15/00: Influent monitoring equipment was flow tested to verify accuracy.

Operations and Maintenance

9/5/00 and 10/4/00: Conducted monthly site inspection; removed trash.

10/29/00 and 10/31/00: Conducted post-storm site inspection.

11/18/00: Basin invert and most of the side slopes were hydroseeded by Native Landscape

Vector Activities

9/14/00: Mosquito breeding observed in first riprap basin. Site abated with Altosid pellets.

9/18/00, 9/25/00, 10/2/00, and 10/9/00: Mosquito breeding observed in first riprap basin.

10/17/00: Mosquito breeding observed in first riprap basin. Site abated with Altosid pellets.

10/23/00: Mosquito breeding observed in first riprap basin.

11/6/00: Mosquito breeding was observed in both riprap basins.

11/13/00: Mosquito breeding observed in first riprap basin.

11/21/00: Mosquito breeding was observed in both riprap basins.

Issues / Solutions

None this period.

SR-78/I-15 Extended Detention Basin (Site ID 111102)

Monitoring/Sampling Activities

9/18/00: Installed clean teflon and peristaltic sampler tubing and intake strainers.

9/27/00: Checked programs and calibrated flow meters and samplers. Conducted final monitoring station readiness inspection prior to storm season.

10/10/00: NWS forecast predicted 80% chance of 0.20 to 0.30 inches of rain. Monitoring crews were mobilized. Storm event only produced 0.04 inches of rainfall. No samples were taken due to insufficient flow.

10/26/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain. Monitoring crews were mobilized. Storm event only produced 0.07 inches of rainfall. No samples were sent to the laboratory due to insufficient flow.

10/29/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain and then later downgraded to 50% chance of 0.25 to 0.50 inches of rain. Monitoring crews were mobilized. Samples were collected at both the influent and effluent stations and sent to the laboratory for analysis.

11/10/00: NWS forecast predicted 70% chance of up to 0.25 inches of scattered rainfall. Monitoring crews were not mobilized. Storm event produced 0.25 inches of rainfall.

11/15/00: The influent monitoring equipment was flow tested to verify accuracy.

Operations and Maintenance

9/6/00: Conducted monthly site inspection.

9/26/00: Deteriorated gravel bags were removed from the upper perimeter of the access road.

10/5/00: Conducted Monthly site inspection; removed trash.

10/27/00 and 10/31/00: Conducted post-storm site inspection.

11/18/00: Basin invert was hydroseeded by Native Landscape

Vector Activities

None this period.

Issues / Solutions

None this period.

I-5/La Costa Avenue Infiltration Basin (Site ID 111103)

Monitoring/Sampling Activities

9/12/00: Conducted annual sediment characterization sampling.

9/20/00: Groundwater baseline well sampling conducted.

8/24/00, 9/7/00, 9/20/00, 10/6/00, 10/18/00, 11/3/00, and 11/15/00: Measured well depth. The groundwater log is provided in this report (Appendix G).

9/27/00: Checked programs and calibrated flow meter. Conducted final monitoring station readiness inspection prior to storm season.

10/10/00: NWS forecast predicted 80% chance of 0.20 to 0.30 inches of rain. Monitoring crews were mobilized. Storm event only produced 0.01 inches of rainfall.

10/26/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain. Monitoring crews were mobilized. Storm event produced 0.51 inches of rainfall. Empirical observations were made.

10/29/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain and then later downgraded to 50% chance of 0.25 to 0.50 inches of rain. Monitoring crews were mobilized. Empirical observations were made.

11/10/00: NWS forecast predicted 70% chance of up to 0.25 inches of scattered rainfall. Monitoring crews were not mobilized. Storm event produced 0.24 inches of rainfall.

Operations and Maintenance

9/5/00 and 10/4/00: Conducted monthly site inspection.

10/13/00: Basin and side slope vegetation cut to six-inches and woody wetland vegetation and trash was removed.

11/9/00: The basin side slopes became saturated after the 10/29/00 storm event, which covered the entire basin and slopes with water. Subsequently, one of the bird deterrent netting support poles collapsed. The pole was reinforced and crews noted two more poles losing stability. On 11/14/00, those poles were reinforced.

Vector Activities

11/6/00: Mosquito breeding was observed in the basin.

11/13/00: Mosquito breeding was observed in the basin.

11/21/00: Mosquito breeding was observed in the basin.

Issues / Solutions

None this period.

I-5/La Costa Wet Basin (Site ID 111104)

Monitoring/Sampling Activities

9/5-7/00, 10/3-5/00, and 11/6-8/00: The monthly paired 48-hour time-weighted composite baseline sampling (at the 6 inch inlet pipe from the trapezoidal channel and at the wet basin effluent) was conducted. The monthly baseline sampling results are listed in Appendix E.

9/21/00: Installed clean teflon and peristaltic sampler tubing and intake strainers.

9/26/00: Checked programs and calibrated flow meters and samplers. Conducted final monitoring station readiness inspection prior to storm season.

10/10/00: NWS forecast predicted 80% chance of 0.20 to 0.30 inches of rain. Monitoring crews were mobilized. Storm event only produced 0.01 inches of rainfall. No samples were taken due to insufficient flow.

10/26/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain. Monitoring crews were mobilized. No samples were sent to the laboratory due to a sampler failure at the influent. The sampler was replaced during the storm, but percent capture had fallen below acceptable limits.

10/29/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain and then later downgraded to 50% chance of 0.25 to 0.50 inches of rain. Monitoring crews were mobilized. No samples were sent to the laboratory due to a malfunction with the replacement sampler at the influent.

11/10/00: NWS forecast predicted 70% chance of up to 0.25 inches of scattered rainfall. Monitoring crews were not mobilized. Storm event produced 0.28 inches of rainfall.

Operations and Maintenance

9/5/00, 10/4/00, and 11/6/00::	Conducted monthly site inspections.
9/27/00, 10/29/00, 11/3/00, and 11/13/00:	Dam in trapezoidal channel was re-built.
10/29/00 and 11/1/00:	Conducted post-storm site inspection.

Vector Activities

9/18/00: Minor Mosquito breeding was observed in the basin.

Issues / Solutions

None this period.

I-5/Manchester Avenue Extended Detention Basin (Site ID 111105)

Monitoring/Sampling Activities

9/18/00:	Installed clean teflon and peristaltic sampler tubing and intake strainers.
9/27/00:	Checked programs and calibrated flow meters and samplers. Conducted final monitoring station readiness inspection prior to storm season.
10/10/00:	NWS forecast predicted 80% chance of 0.20 to 0.30 inches of rain. Monitoring crews were mobilized. Storm event only produced 0.02 inches of rainfall. No samples were taken due to insufficient flow.
10/26/00:	NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain. Monitoring crews were mobilized. Samples were collected at both the influent and effluent stations and sent to the laboratory for analysis.
10/29/00:	NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain and then later downgraded to 50% chance of 0.25 to 0.50 inches of rain. Monitoring crews were mobilized. Samples were collected at both the influent and effluent stations and sent to the laboratory for analysis.
11/10/00:	NWS forecast predicted 70% chance of up to 0.25 inches of scattered rainfall. Monitoring crews were not mobilized. Storm event only produced 0.03 inches of rainfall.
11/13/00:	Influent monitoring equipment was flow tested to verify accuracy.

Operations and Maintenance

9/5/00:	Conducted monthly site inspection.
10/4/00:	Conducted monthly site inspection; removed trash.
10/29/00 and 11/1/00:	Conducted post-storm site inspection.
11/18/00:	Basin invert and bare spots along the basin side slopes were hydroseeded by Native Landscape

Vector Activities

None this period.

Issues/Solutions

None this period.

Kearny Mesa Maintenance Station StormFilter - Perlite/Zeolite (Site ID 112201)

Monitoring/Sampling Activities

9/19/00: Installed clean teflon and peristaltic sampler tubing and intake strainers.

9/25/00: Checked programs and calibrated flow meters and samplers. Conducted final monitoring station readiness inspection prior to storm season.

10/10/00: NWS forecast predicted 80% chance of 0.20 to 0.30 inches of rain. Monitoring crews were mobilized. Storm event only produced 0.04 inches of rainfall. No samples were taken due to insufficient flow.

10/26/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain. Monitoring crews were mobilized. Samples were collected at both the influent and effluent stations and sent to the laboratory for analysis.

10/29/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain and then later downgraded to 50% chance of 0.25 to 0.50 inches of rain. Monitoring crews were mobilized. Significant rainfall intensities overwhelmed the BMP; the inlet pipe surcharged and submerged the ultrasonic sensor briefly. No samples were sent to the laboratory for analysis.

11/10/00: NWS forecast predicted 70% chance of up to 0.25 inches of scattered rainfall. Monitoring crews were not mobilized. Storm event only produced 0.13 inches of rainfall.

Operations and Maintenance

9/5/00 and 10/4/00: Conducted monthly site inspection.

10/9/00: Removed accumulated sediment from Stormfilter basins 1 and 2. The removed sediment was stored on site and sediment samples were sent to the laboratory for analysis.

10/29/00 and 10/30/00: Conducted post-storm site inspection.

11/6/00: Conducted wet weather site inspection.

Vector Activities

10/9/00: Mosquito breeding was observed in the second basin.

10/23/00: Mosquito breeding was observed in the first basin. A few adult Culex pipiens mosquitoes were captured on the inside wall of the first basin.

Issues / Solutions

None this period.

Escondido Maintenance Station Media Filter - Sand (Site ID 112202)

Monitoring/Sampling Activities

9/28/00: Installed clean teflon and peristaltic sampler tubing and intake strainers. Checked programs and calibrated flow meters and samplers. Conducted final monitoring station readiness inspection prior to storm season.

10/10/00: NWS forecast predicted 80% chance of 0.20 to 0.30 inches of rain. Monitoring crews were mobilized. Storm event only produced 0.04 inches of rainfall. No samples were taken due to insufficient flow.

10/26/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain. Monitoring crews were mobilized. Samples were collected at the influent and sent to the laboratory for analysis; there was no flow at the effluent.

10/29/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain and then later downgraded to 50% chance of 0.25 to 0.50 inches of rain. Monitoring crews were mobilized. BMP did receive significant rainfall intensities; inlet pipe surcharged and ultrasonic sensor was briefly submerged. Samples were collected at both the influent and effluent stations and sent to the laboratory for analysis.

11/10/00: NWS forecast predicted 70% chance of up to 0.25 inches of scattered rainfall. Monitoring crews were not mobilized. Storm event produced 0.31 inches of rainfall.

Operations and Maintenance

9/6/00 and 10/5/00: Conducted monthly site inspection.

9/28/00: Canal gate was closed for the storm season.

10/27/00 and 10/31/00: Conducted post-storm site inspection.

11/7/00: Conducted wet weather site inspection.

Vector Activities

10/23/00: No mosquito breeding was observed. Adult Culex pipiens mosquitoes were captured inside the chamber.

11/21/00: Mosquitoes breeding in 1st chamber.

Issues / Solutions

None this period.

La Costa Park and Ride Media Filter - Sand (Site ID 112203)

Monitoring/Sampling Activities

9/28/00: Installed clean teflon and peristaltic sampler tubing and intake strainers. Checked programs and calibrated flow meters and samplers. Conducted final monitoring station readiness inspection prior to storm season.

10/10/00: NWS forecast predicted 80% chance of 0.20 to 0.30 inches of rain. Monitoring crews were mobilized. Storm event only produced 0.01 inches of rainfall. No samples were taken due to insufficient flow.

10/26/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain. Monitoring crews were mobilized. Samples were collected at both the influent and effluent stations and sent to the laboratory for analysis.

10/29/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain and then later downgraded to 50% chance of 0.25 to 0.50 inches of rain. Monitoring crews were mobilized. Significant rainfall intensities overwhelmed the BMP; flow was at the maximum level for the inlet and was observed bypassing inlet and flowing through overflow structure. No samples were sent to the laboratory for analysis.

11/10/00: NWS forecast predicted 70% chance of up to 0.25 inches of scattered rainfall. Monitoring crews were not mobilized. Storm event produced 0.24 inches of rainfall.

Operations and Maintenance

9/5/00 and 10/4/00: Conducted monthly site inspection.

9/8/00: The bird deterrent net was removed in accordance with the MID.

9/27/00, 10/9/00, 10/25/00, 11/6/00, and 11/13/00: Drain caps were temporarily removed to allow the pre-sedimentation chamber to de-water.

10/5/00: The drain pipe from the sedimentation chamber to the sand filter was retrofitted with a smaller diameter drain hole.

10/29/00 and 11/1/00: Conducted post-storm site inspection.

11/6/00: Conducted wet weather site inspection.

Vector Activities

10/2/00 and 10/9/00: Mosquito breeding was observed in the spreader trough.

10/17/00: Mosquito breeding was observed in the spreader trough. Site abated with Altosid pellets.

10/23/00: Mosquito breeding was observed in the spreader trough.

10/30/00: Mosquito breeding was observed in standing water in sand filter and in the spreader trough.

11/6/00: Mosquito breeding was observed in the spreader trough.

11/13/00: Mosquito breeding was observed in the spreader trough.

11/21/00: Mosquito breeding was observed in the spreader trough.

Issues / Solutions

None this period.

SR-78/I-5 Park and Ride Media Filter - Sand (Site ID 112204)

Monitoring/Sampling Activities

9/22/00: Sediment was cleared from the inlet pipe and clean teflon and peristaltic sampler tubing and intake strainers were installed.

9/27/00: Checked programs and calibrated flow meters and samplers. Conducted final monitoring station readiness inspection prior to storm season.

10/10/00: NWS forecast predicted 80% chance of 0.20 to 0.30 inches of rain. Monitoring crews were mobilized. Storm event only produced 0.01 inches of rainfall. No samples were taken due to insufficient flow.

10/26/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain. Monitoring crews were mobilized. Samples were collected at both the influent and effluent stations and sent to the laboratory for analysis.

10/29/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain and then later downgraded to 50% chance of 0.25 to 0.50 inches of rain. Monitoring crews were mobilized. Samples were collected at both the influent and effluent stations and sent to the laboratory for analysis.

11/10/00: NWS forecast predicted 70% chance of up to 0.25 inches of scattered rainfall. Monitoring crews were not mobilized. Storm event produced 0.31 inches of rainfall.

Operations and Maintenance

9/6/00: Conducted monthly site inspection.

9/8/00: The bird deterrent net was removed in accordance with the MID. Trash was also removed from the site.

10/5/00: Conducted monthly site inspection. The drain pipe from the sedimentation chamber to the sand filter was retrofitted with a smaller diameter drain hole.

10/29/00 and 11/1/00: Conducted post-storm site inspection.

11/7/00: Conducted wet weather site inspection.

11/13/00: Drain caps were temporarily removed to allow the pre-sedimentation chamber to de-water.

Vector Activities

10/2/00: Mosquito breeding was observed.

10/9/00: Mosquito breeding was observed.

11/6/00: Mosquito breeding was observed in the spreader trough.

11/21/00: Mosquito breeding was observed in the spreader trough.

Issues / Solutions

None this period.

Melrose Ave/SR-78 Bio Swale (Site ID 112205)

Monitoring/Sampling Activities

9/21/00: Installed clean teflon and peristaltic sampler tubing and intake strainers.

9/27/00: Checked programs and calibrated flow meters and samplers. Conducted final monitoring station readiness inspection prior to storm season.

10/10/00: NWS forecast predicted 80% chance of 0.20 to 0.30 inches of rain. Monitoring crews were mobilized. Storm event produced no rainfall.

10/26/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain. Monitoring crews were mobilized. Samples were collected at the influent and sent to the laboratory for analysis; there was no flow at the effluent.

10/29/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain and then later downgraded to 50% chance of 0.25 to 0.50 inches of rain. Monitoring crews were mobilized. Samples were collected at the influent and sent to the laboratory for analysis; there was no flow at the effluent.

11/10/00: NWS forecast predicted 70% chance of up to 0.25 inches of scattered rainfall. Monitoring crews were not mobilized. Storm event produced 0.21 inches of rainfall.

11/14/00: Influent monitoring equipment was flow tested to verify accuracy.

Operations and Maintenance

9/6/00 and 10/5/00: Conducted monthly site inspection; removed trash.

10/27/00 and 10/30/00:	Conducted post storm site inspection.
10/31/00:	Warning signs were posted to prevent unauthorized maintenance.
11/18/00:	South side slope was hydroseeded by Native Landscape

Vector Activities

None this period.

Issues / Solutions

None this period.

I-5 Palomar Airport Biofiltration Swale (Site ID 112206)

Monitoring/Sampling Activities

9/22/00:	Installed clean teflon and peristaltic sampler tubing and intake strainers.
9/27/00:	Checked programs and calibrated flow meters and samplers. Conducted final monitoring station readiness inspection prior to storm season.
10/10/00:	NWS forecast predicted 80% chance of 0.20 to 0.30 inches of rain. Monitoring crews were mobilized. Storm event only produced 0.06 inches of rainfall. No samples were taken due to insufficient flow.
10/26/00:	NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain. Monitoring crews were mobilized. No samples were sent to the laboratory due to flow meter failure at the influent and no flow at the effluent.
10/29/00:	NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain and then later downgraded to 50% chance of 0.25 to 0.50 inches of rain. Monitoring crews were mobilized. Significant rainfall intensities overwhelmed the BMP; water was bypassing the inlet and sheet flow from the highway was flooding the swale. No samples were sent to the laboratory for analysis.
11/10/00:	NWS forecast predicted 70% chance of up to 0.25 inches of scattered rainfall. Monitoring crews were not mobilized. Storm event only produced 0.18 inches of rainfall.
11/10/00:	In an effort to improve flow conditions the influent monitoring pipe was removed and the flow sensor was mounted directly to the concrete channel.

11/13/00: The influent monitoring equipment was flow tested to verify accuracy.

Operation and Maintenance

9/5/00: Conducted monthly site inspection

10/5/00: Conducted monthly site inspections.

11/15/00: Gopher holes were collapsed; trash removed.

Vector Activities

None this period.

Issues / Solutions

10/29/00: Adopt A Highway cut the vegetation below MID specifications.

10/31/00: Grass cuttings were removed and warning signs were posted to prevent unauthorized maintenance.

Carlsbad Maintenance Station Bio Strip Infiltration Trench (Site ID 112207)

Monitoring/Sampling Activities

9/19/00: Installed clean teflon and peristaltic sampler tubing and intake strainers.

9/26/00: Checked programs and calibrated flow meters and samplers. Conducted final monitoring station readiness inspection prior to storm season.

9/19/00: Groundwater baseline well sampling conducted. Measured well depth.

10/18/00 and 11/15/00: Measured well depth.

10/10/00: NWS forecast predicted 80% chance of 0.20 to 0.30 inches of rain. Monitoring crews were mobilized. Storm event only produced 0.03 inches of rainfall. No samples were taken due to insufficient flow.

10/26/00: NWS forecast predicted 80% chance of 0.25 to 0.75 inches of rain. Monitoring crews were mobilized. Samples were collected at the influent and sent to the laboratory for analysis; there was no flow at the effluent.

10/29/00: NWS)forecast predicted 80% chance of 0.25 to 0.75 inches of rain and then later downgraded to 50% chance of 0.25 to 0.50 inches of rain. Monitoring crews were mobilized. Samples were collected at both the influent and effluent stations and sent to the laboratory for analysis.

11/10/00: NWS forecast predicted 70% chance of up to 0.25 inches of scattered rainfall. Monitoring crews were not mobilized. Storm event produced 0.25 inches of rainfall.

Operations and Maintenance

9/5/00 and 10/4/00: Conducted monthly site inspection.

Vector Activities

None this period.

Issues / Solutions

None this period.

Summary of Target and Successfully Sampled Storms Per Site

Location	BMP Type	Monitoring Consultant	Operational (yes/no)	Operational Date	Target Number of Storms	Successfully Sampled Storms [1, 4] (PRELIMINARY)			
						1998-1999	1999-2000	2000-2001	Total to Date
District 7									
I-605/SR-91	IB	MW/Law	Yes	4/9/99	**4**	0	8[3]	2[3]	**10[3]**
I-210 East of Orcas	CDS	MW/Law	Yes	8/10/00	**8**	0	0	0	**0**
I-210 East of Filmore	CDS	MW/Law	Yes	8/10/00	**8**	0	0	1	**1**
I-5/I-605	EDB	MW/Law	Yes	2/26/99	**10**	2	4	1	**7**
I-605/SR-91	EDB	MW/Law	Yes	2/22/99	**10**	3	3	1	**7**
Paxton P & R	MF	MW/Law	No	5/21/01[2]	**8**	0	0	0	**0**
Metro MS	MCTT	MW/Law	No	5/21/01[2]	**8**	0	0	0	**0**
Alameda MS	OWS	MW/Law	Yes	5/17/99	**8**	0	4	1	**5**
Eastern MS	MF	MW/Law	Yes	2/15/99	**8**	1	4	0	**5**
Foothill MS	MF	MW/Law	Yes	3/8/99	**8**	2	4	1	**7**
Termination P & R	MF	MW/Law	Yes	5/17/99	**8**	0	4	1	**5**
Via Verde P & R	MCTT	MW/Law	Yes	5/17/99	**8**	0	4	1	**5**
Lakewood P & R	MCTT	MW/Law	Yes	5/17/99	**8**	0	4	2	**6**
Altadena	Bio Strip	MW/Law	Yes	10/1/99	**8**	0	6[8]	1	**7**
	Infiltration Trench	MW/Law	Yes	10/1/99	**8**	0	6[3]	1[3]	**7[3]**
Foothill MS	DII north- SG Insert	MW/Law	Yes	1/22/99	**8**	0[7]	7	1	**8**
	DII south- FF Insert	MW/Law	Yes	1/22/99	**8**	0[7]	7	1	**8**
Las Flores MS	DII north-SG Insert	MW/Law	Yes	1/22/99	**8**	0[7]	5	1	**6**
	DII south-FF Insert	MW/Law	Yes	1/22/99	**8**	0[7]	5	1	**6**
Rosemead MS	DII north-FF Insert	MW/Law	Yes	1/22/99	**8**	0[7]	5	2[5]	**7**
	DII south-SG Insert	MW/Law	Yes	1/22/99	**8**	0[7]	5	2	**7**
I-605/SR-91	Bio Strip	MW/Law	Yes	10/1/99	**8**	0	3[6]	2[6]	**5**
	Bio Swale	MW/Law	Yes	10/1/99	**8**	0	3[6]	2[6]	**5**
Cerritos MS	Bio Swale	MW/Law	Yes	10/1/99	**8**	0	4	2[6]	**6**
I-5/I-605	Bio Swale	MW/Law	Yes	10/1/99	**8**	0	4	1	**5**
I-605/ Del Amo	Bio Swale	MW/Law	Yes	10/1/99	**8**	0	2	2[6]	**4**
District 11									
I-5/SR-56	EDB	KLI	Yes	1/24/99	**12**	4	5	1	**10**
I-15/SR-78	EDB	KLI	Yes	1/24/99	**12**	4	5	1	**10**
I-5/La Costa (West)	IB	KLI	Yes	1/24/99	**12**	8[3]	13[3]	2[3]	**23[3]**
I-5/La Costa (East)	WB	KLI	Yes	10/1/99	**8**	0	5	0	**5**
I-5/Manchester (East)	EDB	KLI	Yes	10/1/99	**8**	0	4	2	**6**
Kearney Mesa MS	StormFilter	KLI	Yes	10/1/99	**12**	3	6	1	**10**
Escondido MS	MF	KLI	Yes	2/16/99	**12**	3	5	1	**9**
La Costa P & R	MF	KLI	Yes	2/16/99	**12**	3	5	1	**9**
SR-78/I-5 P& R	MF	KLI	Yes	2/26/99	**12**	2	5	2	**9**
Melrose Ave/SR-78	Bio Swale	KLI	Yes	3/1/99	**12**	0	2[9]	0	**2**
I-5 Palomar Airport Rd	Bio Swale	KLI	Yes	10/1/99	**12**	0	4[6]	0	**4**
Carlsbad MS	Bio Strip	KLI	Yes	10/1/99	**12**	0	3	1	**4**
	Infiltration Trench	KLI	Yes	10/1/99	**12**	8[3]	11[3]	2[3]	**21[3]**

[1] All 1998-1999 DII data in question. A criteria for acceptance has been established . 1998-1999 Data will be reviewed at the end of the year (2000).
[2] Subject to schedule update
[3] Empirical Observations and runoff testing from influent only. No runoff effluent; groundwater or vadose zone samples only.
[4] All Stormwater sampling will terminate at the end of the defined monitoring season – Spring 2001
[5] Subject to review: first sample of the season did not meet minimum number of aliquots but did meet percent storm capture
[6] During one storm, influent sample collected; no effluent flow, thus no effluent sample
[7] 1998/1999 DII data was disqualified
[8] Subject to review: did not meet minimum number of aliquots but did meet percent storm capture
[9] Influent samples collected; no effluent flow, thus no effluent sampled.

OMM PLAN ACTIVITIES

Volumes I and II

The documents have been finalized and adopted. No changes were made to the documents during the past quarter.

Maintenance Indicator Document

During the past quarter changes were made to the Maintenance Indicator Document (MID). Recent changes to the MID pertain to OWS (sediment inspection frequency) , Media Filters (trash inspection frequency), MCTT (trash inspection frequency), and DII StreamGuard (absorbent pack replacement frequency). Changes to the MID have been discussed and approved during the Biweekly meetings. The MID Version 14 was released to the team via email on October 20, 2000.

Database

The OMM Database is updated monthly and posted on the www.rbf.com/caltrans web site. Data collected during inspections, maintenance, empirical observations, and preliminary analytical data is posted on the web site. Appendix D provides an overview of the data collected during empirical observations.

O&M Cost

Cumulative operation and maintenance cost and hours are tracked as part of the program. Costs from October through September 2000 are included in Appendix C of this document. Summary sheets are provided with costs sorted by BMP types as well as by Districts. The detailed cost and hours breakdown for each BMP site is also included.

VECTOR ACTIVITIES

Summary of vector issues from August 24, 2000 through November 21, 2000.

DISTRICT 7

San Gabriel Valley Mosquito & Vector Control District

Monitoring

Breeding was observed at the following sites:

10/2/00- Sedimentation vault of the MCTT at Via Verde P&R (Site #74206).
Spreader ditch of the media filter at Foothill MS (Site # 74203).

10/30/00- Sedimentation vault of the MCTT at Via Verde P&R (Site #74206).

11/9/00- Sedimentation vault of the MCTT at Via Verde P&R (Site #74206).

Abatement

10/2/00- Sedimentation vault of the MCTT at Via Verde P&R (Site #74206) treated with Altosid pellets.
Spreader ditch of the media filter at Foothill MS (Site #74203) treated with Altosid pellets.

10/30/00- Sedimentation vault of the MCTT at Via Verde P&R (Site #74206) treated with liquid Altosid.

11/9/00- Sedimentation vault of the MCTT at Via Verde P&R (Site #74206) treated with Altosid pellets.

Greater Los Angeles County Vector Control District

Monitoring

Breeding was observed at the following sites:

9/13/00 - Sedimentation vault of the MCTT at the Lakewood P&R (Site #74208).

9/29/00 – Sedimentation vault of the media filter at Termination P&R (Site #74204).
Sedimentation vault of the media filter at Eastern Regional MS (Site

#74202).
Sump of the CDS unit at I-210/ East of Orcas (Site #73102).
Concrete outlet sump of the I-5 / I-605 EDB (Site # 74101).

10/6/00 – Sedimentation vault and spreader ditch of the media filter at Termination P&R (Site #74204).
Sedimentation vault of the MCTT at Lakewood P&R (Site #74208).
Sedimentation vault of the media filter at Eastern Regional MS (Site # 74202).
Sump of the CDS unit at I-210/ East of Orcas (Site #73102).
Concrete outlet sump at the I-5 / I-605 EDB.

10/12/00 - Sedimentation vault of the media filter at Eastern Regional MS (Site #74202).
Sump of the CDS unit at I-210/ East of Orcas (Site #73102).
Sedimentation vault of the MCTT at Lakewood P&R (Site #74208).
Sump of the CDS unit at I-210/ East of Filmore (Site #73103).
Concrete outlet sump at the I-5 / I-605 EDB.

10/19/00- Sedimentation vault of the media filter at Eastern Regional MS (Site #74202).
Sump of the CDS unit at I-210/ East of Orcas (Site #73102).
Sedimentation vault of the MCTT at Lakewood P&R (Site #74208).
Sump of the CDS unit at I-210/ East of Filmore (Site #73103).
Concrete outlet sump at the I-5 / I-605 EDB.

10/27/00 - Sedimentation vault and spreader ditch of the media filter at Eastern Regional MS (Site #74202).
Sump of the CDS unit at I-210/ East of Orcas (Site #73102).
Sedimentation vault of the MCTT at Lakewood P&R (Site #74208).
Sump of the CDS unit at I-210/ East of Filmore (Site #73103).
Concrete outlet sump at the I-5 / I-605 EDB.

11/2/00 - Sedimentation vault of the media filter at Eastern Regional MS (Site #74202).
Sump of the CDS unit at I-210/ East of Orcas (Site #73102).
Sump of the CDS unit at I-210/ East of Filmore (Site #73103).
Sedimentation vault of the MCTT at Lakewood P&R (Site #74208).
Concrete outlet sump at the I-5 / I-605 EDB.

11/8/00 - Sump of the CDS unit at I-210/ East of Orcas (Site #73102).
Sedimentation vault of the MCTT at Lakewood P&R (Site #74208).
Concrete outlet sump at the I-5 / I-605 EDB.

11/17/00- Sedimentation chamber of the MCTT at Lakewood P&R (Site #74208).
Sump of the CDS unit at I-210/ East of Orcas (Site #73102).
Concrete outlet sump at the I-5 / I-605 EDB.

Abatement

9/13/00 - Sedimentation vault of the MCTT at the Lakewood P&R (Site #74208) treated with Altosid pellets.

9/29/00 - Sedimentation vault of the media filter at Termination P&R (Site #74204) treated with Altosid liquid.
Sedimentation vault of the media filter at Eastern Regional MS (Site #74202) treated with Altosid liquid.
Sump of the CDS unit at I-210/ East of Orcas (Site #73102) treated with Altosid liquid.
Concrete outlet sump of the I-5 / I-605 EDB (Site # 74101) treated with Altosid liquid.

10/6/00 – Sedimentation vault and spreader ditch of the media filter at Termination P&R (Site #74204) treated with Altosid liquid.
Sedimentation vault of the MCTT at Lakewood P&R (Site #74208) treated with Altosid liquid.
Sedimentation vault of the media filter at Eastern Regional MS (Site # 74202) treated with liquid Altosid.
Sump of the CDS unit at I-210/ East of Orcas (Site #73102) treated with Altosid liquid.
Concrete outlet sump at the I-5 / I-605 EDB treated with Altosid liquid.

10/12/00 - Sedimentation vault of the media filter at Eastern Regional MS (Site #74202) treated with Altosid liquid.
Sump of the CDS unit at I-210/ East of Orcas (Site #73102) treated with Altosid liquid.
Sedimentation vault of the MCTT at Lakewood P&R (Site #74208) treated with Altosid liquid.
Sump of the CDS unit at I-210/ East of Filmore (Site #73103) treated with Altosid liquid.
Concrete outlet sump at the I-5 / I-605 EDB treated with Altosid liquid.

10/19/00- Sedimentation vault of the media filter at Eastern Regional MS (Site #74202) treated with Altosid liquid.
Sump of the CDS unit at I-210/ East of Orcas (Site #73102) treated with Altosid liquid.
Sedimentation vault of the MCTT at Lakewood P&R (Site #74208) treated with Altosid liquid.

Sump of the CDS unit at I-210/ East of Filmore (Site #73103) treated with Altosid liquid.
Concrete outlet sump at the I-5 / I-605 EDB treated with Altosid liquid.

10/27/00 - Sedimentation vault and spreader ditch of the media filter at Eastern Regional MS (Site #74202) treated with Altosid liquid.
Sump of the CDS unit at I-210/ East of Orcas (Site #73102) treated with Altosid liquid.
Sedimentation vault of the MCTT at Lakewood P&R (Site #74208) treated with Altosid liquid.
Sump of the CDS unit at I-210/ East of Filmore (Site #73103) treated with Altosid liquid.
Concrete outlet sump at the I-5 / I-605 EDB treated with Altosid liquid.

11/2/00 - Sedimentation vault of the media filter at Eastern Regional MS (Site #74202) treated with Altosid liquid.
Sump of the CDS unit at I-210/ East of Orcas (Site #73102) treated with Altosid liquid.
Sump of the CDS unit at I-210/ East of Filmore (Site #73103) treated with Altosid liquid.
Sedimentation vault of the MCTT at Lakewood P&R (Site #74208) treated with Altosid liquid.
Concrete outlet sump at the I-5 / I-605 EDB treated with Altosid liquid.

11/8/00 - Sump of the CDS unit at I-210/ East of Orcas (Site #73102) treated with Altosid liquid.
Sedimentation vault of the MCTT at Lakewood P&R (Site #74208) treated with Altosid liquid.
Concrete outlet sump at the I-5 / I-605 EDB treated with Altosid liquid.

11/17/00- Sedimentation chamber of the MCTT at Lakewood P&R (Site #74208) treated with Altosid liquid.
Sump of the CDS unit at I-210/ East of Orcas (Site #73102) treated with Altosid liquid.
Concrete outlet sump at the I-5 / I-605 EDB treated with Altosid liquid.

Los Angeles County West Vector Control District

Monitoring

No sites were found breeding during this period.

Abatement

No abatement carried out during this period.

DISTRICT 11

County of San Diego Vector Surveillance and Control

Monitoring

Breeding was observed at the following sites:

9/14/00 – The EDB at I-5/SR-56 (Site #111101).

9/18/00 – The EDB at I-5 / SR-56 (Site #111101).
WB at La Costa (Site #111104).

9/25/00 - The EDB at I-5 / SR-56 (Site #111101).

10/2/00 – The EDB at I-5 / SR-56 (Site #111101).
Spreader trough of the media filter at La Costa P&R (Site #112203).
Spreader trough of the media filter at SR-78 / I-5 P&R (Site #112204).

10/9/00 – Spreader trough of the media filter at La Costa P&R (Site #112203).
Spreader trough of the media filter at SR-78 / I-5 P&R (Site #112204).
StormFilter at Kearny Mesa MS (Site #112201).
The EDB at I-5/SR-56 (Site #111101).

10/17/00 - The EDB at I-5/SR-56 (Site #111101).
Spreader trough of the media filter at La Costa P&R (Site #112203).

10/23/00 - StormFilter at Kearny Mesa MS (Site #112201).
The EDB at I-5/SR-56 (Site #111101).
Spreader trough of the media filter at La Costa P&R (Site #112203).

10/30/00 – Spreader trough of the media filter at La Costa P&R (Site #112203).

11/6/00 - The EDB at I-5/SR-56 (Site #111101).
Spreader trough of the media filter at La Costa P&R (Site #112203).

The IB at La Costa (Site #111103).
Spreader trough of the media filter at SR-78 / I-5 P&R (Site #112204).

11/13/00 - The EDB at I-5/SR-56 (Site #111101).
Spreader trough of the media filter at La Costa P&R (Site #112203).
The IB at La Costa (Site #111103).

11/21/00 - The EDB at I-5/SR-56 (Site #111101).
Spreader trough of the media filter at La Costa P&R (Site #112203).
The IB at La Costa (Site #111103).
Spreader trough of the media filter at SR-78 / I-5 P&R (Site #112204).
Escondido MF chamber (Site #111102).

Abatement

9/14/00 – The EDB at I-5/SR-56 (Site #111101) treated with Altosid pellets.

10/17/00- The EDB at I-5/SR-56 (Site #111101) treated with Altosid pellets.
Spreader trough of the media filter at La Costa P&R (Site #112203) treated with Altosid pellets.

DEPARTMENT OF HEALTH SERVICES

Out-of-State Survey

To facilitate a better understanding of possible vector problems associated with stormwater management structures in areas where DHS had not surveyed previously, an effort is being undertaken to survey those areas missed. A list of vector control agency contacts has been compiled by DHS, and they are gathering information via phone and mail. Summarized below are some of the areas that DHS is in contact with:

- Colorado: Colorado Mosquito Control, Tri-County Health Department
- District of Columbia: D.C. Department of Health
- Maryland: Maryland Department of Agriculture
- Minnesota: Metropolitan MCD
- New Jersey: Bergen County Division of Mosquito Control, Burlington County MEC, Cumberland County Department of Mosquito Control, Essex County Mosquito Control, etc.
- Oregon: Multnomah County Health Department
- Texas: City of Austin, Department of Environmental Health
- Virginia: York County Mosquito Control, Virginia Beach Mosquito Control Bureau, NPDH Department of Vector Control, etc.
- Wisconsin: lacrosse County Health Department

More stormwater contacts has been forwarded to DHS, which they will be working on to gather additional information. DHS is also conducting an internet search to locate more vector control agencies in other areas.

Vector Database

The DHS vector database reports have been updated for this quarter and are available via the RBF Webster.

Mosquito Production Study

To assess whether the BMPs have the potential to produce vectors, DHS has initiated a study to determine to what degree the sites have on vector production. Included in this report in Appendix B are the preliminary findings of the interim report "A Preliminary Assessment of Vector Production" associated with the Caltrans BMP Retrofit Pilot Studies. It is important to note that through the period of May-November, samples were collected on a weekly basis, while the rest of the year samples were collected on a BI-weekly basis. Some general trends seen to date include:

- The MCTT, CDS units, and the wet basin consistently produce mosquito larvae in large numbers relative to other technologies.
- Biofiltration strips, swells, sand media filters, infiltration basins, drain inlet inserts, extended detention basins, and the oil/water separator have generally produced few or no mosquitoes.
- Some BMPs that initially had produced mosquito larvae (Boswells and strips) have seen a huge decrease in the number of larvae due to structural or maintenance modifications (i.e. grouting energy dissipators and removing drain plug at the Altadena MS biostrip after a storm event).

The full text of DHS' mosquito production interim report can be found in Appendix B.

MCTT Monitoring and "Mosquito-Proofing"

In response to Bob Pitt's recommendations for the MCTT sites, DHS, in association with the Greater Los Angeles County Vector Control District, has assisted Brown and Caldwell and Law Crandall in attempting to mosquito proof the MCTT at the Lakewood P&R.

Design plans for the MCTT aluminum covers have been finalized, and construction is expected to terminate the end of February 2001.

To allow easier sampling access for Vector Control District technicians, the grit chambers have been modified. The plastic aeration balls have been removed and placed in 55-gallon drums, and the grate has been hinged to the wall. A 0.22-inch polyethylene mesh screen has been attached to the grate to allow for capture of debris.

CDS Monitoring and "Mosquito Proofing"

On November 9, 2000, a mosquito screen was installed on the downstream portion of the CDS unit. Additionally, Law Crandall sealed all holes and eliminated the gaps between the lids and the weir box and sump.

Sites Monitored by Vector Control District

Location	BMP Type	Monitor Consultant	Vector Control District	Activities
DISTRICT 7				
I-605/SR-91	IB	MW/Law	GLACVCD	None this period.
I-210 East of Orcas	CDS	MW/Law	GLACVCD	September 29: Abated with Altosid liquid October 6: Abated with Altosid liquid October 12: Abated with Altosid liquid October 19: Abated with Altosid liquid October 27: Abated with Altosid liquid November 2: Abated with Altosid liquid November 8: Abated with Altosid liquid November 17: Abated with Altosid liquid
I-210 East of Filmore	CDS	MW/Law	GLACVCD	October 12: Abated with Altosid liquid October 19: Abated with Altosid liquid October 27: Abated with Altosid liquid November 2: Abated with Altosid liquid
I-5/I-605	EDB	MW/Law	GLACVCD	September 29: Abated with Altosid liquid October 6: Abated with Altosid liquid October 12: Abated with Altosid liquid October 19: Abated with Altosid liquid October 27: Abated with Altosid liquid November 2: Abated with Altosid liquid November 8: Abated with Altosid liquid November 17: Abated with Altosid liquid
I-605/SR-91	EDB	MW/Law	GLACVCD	None this period.
Paxton Park & Ride	MF	MW/Law	GLACVCD	N/A
Metro MS	MCTT	MW/Law	GLACVCD	N/A
Alameda MS	OWS	MW/Law	GLACVCD	None this period.
Eastern MS	MF	MW/Law	GLACVCD	September 29: Abated with Altosid liquid October 6: Abated with Altosid liquid October 12: Abated with Altosid liquid October 19: Abated with Altosid liquid October 27: Abated with Altosid liquid November 2: Abated with Altosid liquid
Foothill MS	MF	MW/Law	SGVVCD	October 2: Abated with Altosid pellets
Termination Park & Ride	MF	MW/Law	GLACVCD	September 29: Abated with with Altosid liquid October 6: Abated with Altosid liquid

Location	BMP Type	Monitor Consultant	Vector Control District	Activities
Via Verde Park & Ride	MCTT	MW/Law	SGVVCD	October 2: Abated with Altosid pellets October 30: Abated with Altosid liquid November 9: Abated with Altosid pellets
Lakewood Park & Ride	MCTT	MW/Law	GLACVCD	September 13: Abated with Altosid pellets October 6: Abated with Altosid liquid October 12: Abated with Altosid liquid October 19: Abated with Altosid liquid October 27: Abated with Altosid liquid November 2: Abated with Altosid liquid November 8: Abated with Altosid liquid November 17: Abated with Altosid liquid
Altadena	Bio Strip/IT	MW/Law	GLACVCD	None this period.
Foothill	DII	MW/Law	SGVVCD	None this period
Las Flores	DII	MW/Law	LA Co West	None this period.
Rosemead	DII	MW/Law	SGVVCD	None this period.
I-605/SR-91	Bio Strip/Swale	MW/Law	GLACVCD	None this period.
Cerritos MS	BioSwale	MW/Law	GLACVCD	None this period.
I-5/I-605	BioSwale	MW/Law	GLACVCD	None this period.
I-605/ Del Amo	BioSwale	MW/Law	GLACVCD	None this period.
DISTRICT 11				
I-5/SR-56	EDB	KLI	SD Co VC	September 14: Abated with Altosid pellets September 18: Breeding observed; no abatement September 25: Breeding observed; no abatement October 2: Breeding observed; no abatement October 9: Breeding observed; no abatement October 17: Abated with Altosid pellets October 23: Breeding observed; no abatement required November 6: Breeding observed; no abatement November 13: Breeding observed; no abatement November 21: Breeding observed; no abatement
I-15/SR-78	EDB	KLI	SD Co VC	None this period.
I-5/La Costa (West)	IB	KLI	SD Co VC	November 6: Breeding observed November 13: Breeding observed November 21: Breeding observed
I-5/La Costa (East)	WB	KLI	SD Co VC	September 18: Breeding observed ; no abatement
I-5/Manchester (East)	EDB	KLI	SD Co VC	None this period.
Kearny Mesa MS	StormFilter (Perlite/Zeolite)	KLI	SD Co VC	October 9: Breeding observed; no abatement October 23: Breeding observed; no abatement
Escondido MS	MF	KLI	SD Co VC	November 21: Breeding observed; no abatement
La Costa Park & Ride	MF	KLI	SD Co VC	October 2: Breeding observed; no abatement

Location	BMP Type	Monitor Consultant	Vector Control District	Activities
				October 9: Breeding observed; no abatement October 17: Abated with Altosid pellets October 23 : Breeding observed; no abatement required October 30: Breeding observed; no abatement November 6: Breeding observed; no abatement November 13: Breeding observed; no abatement November 21: Breeding observed; no abatement
SR-78/I-5 Park & Ride	MF	KLI	SD Co VC	October 2: Breeding observed; no abatement October 9: Breeding observed; no abatement November 6: Breeding observed November 21: Breeding observed
Melrose Ave/SR-78	Bio Swale	KLI	SD Co VC	None this period.
I-5 Palomar Airport Road	Bio Swale	KLI	SD Co VC	None this period.
Carlsbad MS	Bio Strip/IT	KLI	SD Co VC	None this period.

ENVIRONMENTAL INFORMATION

Dudek and Associates Inc. surveyed the BMPs in early September, late September, and October, 2000. The surveys consisted of reviewing the sites for potential endangered, threatened, or sensitive species issues. Conditions reviewed included presence of water and presence of nesting birds or suitable habitat.

Standing water was consistently present at the La Costa Wet Basin during this monitoring period. Additionally, the vegetation which was partially removed at the La Costa Wet Basin in August is growing back quickly and provides suitable nesting habitat for birds.

Nesting birds were not detected during the surveys. The nets erected at the La Costa and I-5/SR-78 Park and Ride Media Filters have been removed. The net at the La Costa Infiltration Basin is still in place and likely will prevent nesting activities by nearby Snowy Plover and Least Tern at this location. It is recommended that nets be reinstalled at the media filters prior to the on-set of the breeding season.

The trapping of pocket gophers was discontinued at all sites per the May 10, 2000, conference call. No trapped activities were conducted by Dudek during this reporting period; however, small mammal traps were observed at the following BMP sites in District 7: I-605/I-5 swale, I-605/SR-91 Extended Detention Basin, I-605/SR-91 swale, I-605/SR-91 basin and Cerritos Maintenance Station. At this time the identity of the person/company setting the traps is unknown to us.

It should be noted that mitigation/maintenance of the BMP facilities will continue according to the previously agreed to Maintenance Indicator Document (MID),

WEATHER

Precipitation data for Los Angeles and San Diego were obtained from NOAA. Precipitation data since the beginning of the 1999-2000 and 2000-20001 seasons for 2 gages in Los Angeles and 2 gage in San Diego is provided below.

The data presented here is for reference only. The actual rainfall at individual BMP sites will vary from the values given in the table. The data presented above for Los Angeles is as of 4:00 p.m. for the preceding 24 hours on the date indicated. For San Diego, is as of 5:00 p.m. for the preceding 24 hours.

December 1999							
Los Angeles – Downtown/USC				**San Diego**			
Day	**Precip. (Inches)**	**Day**	**Precip. (Inches)**	**Day**	**Precip. (Inches)**	**Day**	**Precip. (Inches)**
1	0.00	16	0.00	1	0.00	16	0.00
2	0.00	17	0.00	2	0.00	17	0.00
3	0.00	18	0.00	3	0.00	18	0.00
4	0.00	19	0.00	4	0.00	19	0.00
5	0.00	20	0.00	5	0.00	20	0.00
6	0.00	21	0.00	6	0.00	21	0.00
7	0.00	22	0.00	7	0.00	22	0.00
8	0.00	23	0.00	8	0.00	23	0.00
9	0.00	24	0.00	9	0.00	24	0.00
10	0.03	25	0.00	10	0.03	25	0.00
11	0.00	26	0.00	11	0.00	26	0.00
12	0.00	27	0.00	12	0.00	27	0.00
13	0.00	28	0.00	13	0.00	28	0.00
14	0.00	29	0.00	14	0.00	29	0.00
15	0.00	30	0.00	15	0.00	30	0.00
		31	0.00			31	0.00

January 2000							
Los Angeles – Downtown/USC				**San Diego**			
Day	**Precip. (Inches)**	**Day**	**Precip. (Inches)**	**Day**	**Precip. (Inches)**	**Day**	**Precip. (Inches)**
1	0.12	16	0.00	1	0.28	16	0.03
2	0.00	17	0.02	2	0.04	17	Trace
3	0.00	18	0.01	3	0.00	18	0.00
4	0.00	19	0.00	4	0.00	19	0.00
5	0.00	20	0.00	5	0.00	20	0.00
6	0.00	21	0.00	6	0.00	21	0.00
7	0.00	22	0.00	7	0.00	22	0.00
8	0.00	23	0.02	8	0.00	23	0.00
9	0.00	24	0.00	9	0.00	24	0.00
10	0.00	25	0.42	10	0.00	25	Trace
11	0.00	26	0.14	11	0.00	26	0.03
12	0.00	27	0.00	12	0.00	27	0.00
13	0.00	28	0.00	13	0.00	28	0.00
14	0.00	29	0.00	14	0.00	29	0.00
15	0.00	30	0.03	15	0.00	30	Trace
		31	0.21			31	0.08

February 2000							
Los Angeles – Downtown/USC				**San Diego**			
Day	**Precip. (Inches)**	**Day**	**Precip. (Inches)**	**Day**	**Precip. (Inches)**	**Day**	**Precip. (Inches)**
1	0.00	16	0.58	1	0.00	16	0.07
2	0.00	17	0.08	2	0.00	17	0.14
3	0.00	18	0.00	3	0.00	18	0.00
4	0.00	19	0.00	4	0.00	19	0.00
5	0.00	20	0.29	5	0.02	20	0.33
6	0.00	21	1.63	6	0.00	21	1.19
7	0.00	22	0.00	7	0.00	22	0.58
8	0.00	23	1.09	8	Trace	23	0.08
9	0.00	24	0.00	9	0.00	24	0.63
10	0.41	25	0.00	10	0.03	25	0.00
11	0.12	26	0.00	11	0.09	26	0.00
12	0.62	27	0.24	12	0.39	27	Trace
13	0.26	28	0.00	13	0.06	28	Trace
14	0.44	29	0.00	14	0.06	29	0.00
15	0.00			15	0.00		

March 2000							
Los Angeles – Downtown/USC				**San Diego**			
Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)
1	0.00	16	0.00	1	0.04	16	0.00
2	0.00	17	0.00	2	0.00	17	0.00
3	0.01	18	0.00	3	0.01	18	0.00
4	0.27	19	0.00	4	Trace	19	0.00
5	1.78	20	0.00	5	0.65	20	0.10
6	0.04	21	0.00	6	0.08	21	0.00
7	0.00	22	0.00	7	0.05	22	0.00
8	0.71	23	0.00	8	0.06	23	0.00
9	0.01	24	0.00	9	0.00	24	0.00
10	0.00	25	0.00	10	0.00	25	0.00
11	0.00	26	0.00	11	0.00	26	0.00
12	0.00	27	0.00	12	0.00	27	Trace
13	0.00	28	0.00	13	0.00	28	0.00
14	0.00	29	0.00	14	0.00	29	0.00
15	0.00	30	0.00	15	0.00	30	0.00
		31	0.00			31	0.00

April 2000							
Los Angeles – Downtown/USC				**San Diego**			
Day	**Precip. (Inches)**	**Day**	**Precip. (Inches)**	**Day**	**Precip. (Inches)**	**Day**	**Precip. (Inches)**
1	0.00	16	0.00	1	0.00	16	0.00
2	0.00	17	1.03	2	0.00	17	0.02
3	0.00	18	0.46	3	0.00	18	0.46
4	0.00	19	0.00	4	0.00	19	0.01
5	0.00	20	0.00	5	0.00	20	0.00
6	0.00	21	0.00	6	0.00	21	Trace
7	0.00	22	0.00	7	0.00	22	0.01
8	0.00	23	0.00	8	0.00	23	0.00
9	0.00	24	0.00	9	0.00	24	0.00
10	0.00	25	0.00	10	0.00	25	0.00
11	0.00	26	0.00	11	0.00	26	0.00
12	0.00	27	0.00	12	0.00	27	0.00
13	0.00	28	0.00	13	0.00	28	0.00
14	0.00	29	0.00	14	0.00	29	0.00
15	0.00	30	0.00	15	0.04	30	0.00

May 2000							
Los Angeles – Downtown/USC				**San Diego**			
Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)
1	0.00	16	0.00	1	0.00	16	0.00
2	0.00	17	0.00	2	0.00	17	0.00
3	0.00	18	0.00	3	0.00	18	0.00
4	0.00	19	0.00	4	0.00	19	0.00
5	0.00	20	0.00	5	0.00	20	0.00
6	0.00	21	0.00	6	0.00	21	0.00
7	0.00	22	0.00	7	0.00	22	0.00
8	0.00	23	0.00	8	Trace	23	Trace
9	0.00	24	0.00	9	0.00	24	0.00
10	0.00	25	0.00	10	0.00	25	Trace
11	0.00	26	0.00	11	0.00	26	0.00
12	0.00	27	0.00	12	0.00	27	0.00
13	0.00	28	0.00	13	0.00	28	0.00
14	0.00	29	0.00	14	0.00	29	0.00
15	0.00	30	0.00	15	0.00	30	0.00
		31	0.00			31	0.00

June 2000							
Los Angeles – Downtown/USC				**San Diego**			
Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)
1	0.00	16	0.00	1	0.00	16	0.00
2	0.00	17	0.00	2	0.00	17	0.00
3	0.00	18	0.00	3	0.00	18	0.00
4	0.00	19	0.00	4	0.00	19	0.00
5	0.00	20	0.00	5	0.00	20	0.00
6	0.00	21	0.00	6	0.00	21	Trace
7	0.00	22	0.00	7	0.00	22	0.00
8	0.00	23	0.00	8	0.00	23	0.00
9	0.00	24	0.00	9	0.00	24	0.00
10	0.00	25	0.00	10	0.00	25	Trace
11	0.00	26	0.00	11	0.00	26	0.00
12	0.00	27	0.00	12	0.00	27	0.00
13	0.00	28	0.00	13	0.00	28	0.00
14	0.00	29	0.00	14	0.00	29	0.00
15	0.00	30	0.00	15	0.00	30	0.00

July 2000							
Los Angeles – Downtown/USC				**San Diego**			
Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)
1	0.00	16	0.00	1	0.00	16	0.00
2	0.00	17	0.00	2	0.00	17	0.00
3	0.00	18	0.00	3	0.00	18	0.00
4	0.00	19	0.00	4	0.00	19	0.00
5	0.00	20	0.00	5	0.00	20	0.00
6	0.00	21	0.00	6	0.00	21	0.00
7	0.00	22	0.00	7	0.00	22	0.00
8	0.00	23	0.00	8	0.00	23	0.00
9	0.00	24	0.00	9	0.00	24	0.00
10	0.00	25	0.00	10	0.00	25	0.00
11	0.00	26	0.00	11	0.00	26	0.00
12	0.00	27	0.00	12	0.00	27	0.00
13	0.00	28	0.00	13	0.00	28	0.00
14	0.00	29	0.00	14	0.00	29	0.00
15	0.00	30	0.00	15	0.00	30	0.00
		31	0.00			31	0.00

August 2000							
Los Angeles – Downtown/USC				**San Diego**			
Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)
1	0.00	16	0.00	1	0.00	16	0.00
2	0.00	17	0.00	2	Trace	17	0.00
3	0.00	18	0.00	3	0.00	18	0.00
4	0.00	19	0.00	4	0.00	19	0.00
5	0.00	20	0.00	5	0.00	20	0.00
6	0.00	21	0.00	6	0.00	21	0.00
7	0.00	22	0.00	7	0.00	22	0.00
8	0.00	23	0.00	8	0.00	23	0.00
9	0.00	24	0.00	9	0.00	24	0.00
10	0.00	25	0.00	10	0.00	25	0.00
11	0.00	26	0.00	11	0.00	26	0.00
12	0.00	27	0.00	12	0.00	27	0.00
13	0.00	28	0.00	13	0.00	28	0.00
14	0.00	29	0.07	14	0.00	29	0.01
15	0.00	30	0.00	15	0.00	30	0.00
		31	0.00			31	0.00

September 2000							
Los Angeles – Downtown/USC				**San Diego**			
Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)
1	0.00	16	0.00	1	0.00	16	0.00
2	0.00	17	0.00	2	0.00	17	0.00
3	0.00	18	0.00	3	0.00	18	0.00
4	0.00	19	0.00	4	0.00	19	0.00
5	0.00	20	0.00	5	0.00	20	0.00
6	0.00	21	0.00	6	0.00	21	0.00
7	0.00	22	0.00	7	Trace	22	0.00
8	0.00	23	0.15	8	0.00	23	Trace
9	0.00	24	0.00	9	0.00	24	0.00
10	0.00	25	0.00	10	0.00	25	0.00
11	0.00	26	0.00	11	0.00	26	0.00
12	0.00	27	0.00	12	0.00	27	0.00
13	0.00	28	0.00	13	0.00	28	0.00
14	0.00	29	0.00	14	0.00	29	0.00
15	0.00	30	0.00	15	0.00	30	0.00

October 2000							
Los Angeles – Downtown/USC				**San Diego**			
Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)
1	0.00	16	0.00	1	0.00	16	0.00
2	0.00	17	0.00	2	0.00	17	0.00
3	0.00	18	0.00	3	0.00	18	0.00
4	0.00	19	0.00	4	0.00	19	0.00
5	0.00	20	0.00	5	0.01	20	0.00
6	0.00	21	0.00	6	0.06	21	0.01
7	0.00	22	0.00	7	0.01	22	Trace
8	0.00	23	0.00	8	0.00	23	Trace
9	0.00	24	0.00	9	0.00	24	0.00
10	0.00	25	0.00	10	0.04	25	0.00
11	0.12	26	0.07	11	0.05	26	Trace
12	0.12	27	0.25	12	Trace	27	0.38
13	0.00	28	0.01	13	0.00	28	0.17
14	0.00	29	0.07	14	0.00	29	0.00
15	0.00	30	0.53	15	0.00	30	0.51
		31	0.00			31	0.00

November 2000							
Los Angeles – Downtown/USC				**San Diego**			
Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)
1	0.00	16	0.00	1	0.00	16	0.00
2	0.00	17	0.00	2	0.00	17	0.00
3	0.00	18	0.00	3	0.00	18	0.00
4	0.00	19	0.00	4	Trace	19	0.00
5	0.00	20	0.00	5	0.00	20	0.00
6	0.00	21	0.00	6	0.00	21	0.00
7	0.00	22	0.00	7	0.00	22	0.00
8	0.00	23	0.00	8	0.00	23	0.00
9	0.00	24	0.00	9	Trace	24	0.00
10	0.00	25	0.00	10	0.04	25	0.00
11	0.00	26	0.00	11	0.22	26	0.00
12	0.00	27	0.00	12	0.00	27	0.00
13	0.00	28	0.00	13	0.00	28	0.00
14	0.00	29	0.00	14	Trace	29	0.00
15	0.00	30	0.00	15	0.00	30	0.00

Appendix A
Quarterly Status 10 Meeting Minutes

JN: 34123, 34218

BMP Retrofit Pilot Program
Caltrans District 7 and District 11
Meeting Minutes

ISSUE VERSION: Final

MEETING NO.: 10
DATE: September 20, 2000
TIME: 9:30 am
LOCATION: RBF Consulting

SUBJECT: Meeting Minutes for Quarterly Status Meeting No. 10

Prepared by: S. Taylor

Approved by: (Signature)

Date Prepared: 10/5/00

Attendee Names / Company

Ron Russak/Caltrans D7
Howard Yamaguchi/Caltrans HQ/UCD
Pete Van Riper/Caltrans D7
Richard Gordon/Caltrans D7
Sayra Ramos/Caltrans D11
Cid Tesoro/Caltrans D11
Steve Borroum/CaltransHQ
Brian Currier/Caltrans HQ/UCD
Doug Failing/CaltransD7
Glenn Moeller/Caltrans/CSUS
Catherine Beitia/Caltrans/CSUS
Rick Graff/SD BayKeeper
Steve Fleischli/SM BayKeeper
Rich Horner/NRDC/BayKeepers
Everett DeLano/NRDC/SM BayKeeper
Chris May/NRDC/BayKeepers
Bruce Reznik/SD BayKeeper
Chris Warn/KLI
Pat Kinney/KLI
Marco Metzger/DHS
Toby Roy/DHS

Attendee Names / Company

Steve Brinigar/Law
Ed Othmer/Law
Gary Friedman/MW
Brock Ortega/Dudek/RBF
Trevor Smith/RBF
Ann Walker/RBF
Anna Lantin/RBF
Scott Taylor/RBF
Laura Hansen/RBF
Michael Barrett/UT/RBF
Alan Batdorf/BC
Doug Robison/BC
Adrianne Saboya/BC
Mark Williams/BC
Bill Walton/UC Riverside
Chris Takerio/Hawaii DOT
Suzanne Bevash/Env. Advocates
Jeffrey Munic/CH2MHill
Dean Messer/LWA

Copies To:

File

The following items presented summarize the substantive items discussed or issues resolved at the above meeting to the best of the writer's memory.

ITEM	DESCRIPTION	STATUS	OPENED	DUE	ACTION FOR:
01	**Agenda Item 2 (Opening Remarks):** Plaintiffs noted that the Agenda Item 8 is a '3rd Party Team' Update rather than Cost Workgroup Update (the Cost Workgroup has concluded). Plaintiffs also noted that the Paxton and Metro sites in District 7 are not going to be completed by the stipulated schedule (Schedule in the District 7 Stipulation). They expressed concern about this and asked that Caltrans respond and engage in dialogue on the issue.	Old	3/15/00		District 7
02	**Agenda Item 3a (Vector Monitoring):** There were very few abatements from mid July to mid September. Most abatements in District 7 were at the MCTT or CDS sites. The I-5/605 EDB also had some abatements. In District 11, three abatements at I-5/SR 56 and sand filters. Rich Horner noted that the I-5/I-605 has been abated more often than other sites, but also that there is a change to the outlet structure being completed that should correct the standing water and associated breeding problem. Avoiding this kind of EDB outlet design in the future is a lesson learned. I-5/SR 56 in District 11 has also been observed breeding. The riprap pockets tend to breed at the basin inlet area. Eastern MS and all of the sand filters in D11 breed more often than other D7 filters. Caltrans to look at the conditions causing sand filters in District 11 to breed more regularly. In District 7, Lakewood PR breeds more often than Via Verde. Caltrans to respond to these issues at the next bi-weekly call. Plaintiffs also noted on page 44 of the Quarterly report relative to the La Costa sand filter that breeding was noted on the sand portion of the filter. Caltrans to investigate and determine where the breeding was occurring on the filter.	New	12/14/00	1/4/01	Caltrans/RBF
03	**Agenda Items 3a,b (DHS Report/Survey):** DHS noted that the CDS devices and the MCTT units are the big mosquito producers. The retrofits of these devices to seal openings may help this issue. In the future, if we install mosquito proofing on structures (BMPs) that hold water, there is still a concern that the mosquito proofing can be maintained on a long-term basis. DHS would like to look at these devices over the long-term to see if the mitigation is effective before rendering a final judgment. Cost of maintaining the vector abatement mitigation on the devices is also a factor. In another few months, DHS should have an updated report on the expanded survey/questionnaire. It should be noted that the California vector program is significantly advanced as compared to many other parts of the country, and this makes gathering information from those areas difficult. It is also a problem that DHS does not have out of state travel authority. Rich Horner noted that the county in King County does not have a mosquito control agency, and receives few complaints. He further noted that getting information of this type, when a vector agency does not exist, is a result that should be factored into the analysis. DHS responded that public complaints are not necessarily a good indicator of a problem or lack thereof. Unless the problem becomes acute, there is no real reporting or way to gauge the magnitude of the problem through public comment.	New	12/14/00	3/14/01	DHS
04	**Agenda Item 4 (Overview of O&M Labor Hours and Cost):** Prior to the main agenda item, several non-agenda items were discussed:	New	12/14/00	3/14/01	Plaintiffs/Caltrans

ITEM	DESCRIPTION	STATUS	OPENED	DUE	ACTION FOR:
	As a follow-up on removal efficiency of biofilter swales presented at the previous Quarterly Status Meeting, M Barrett went over the data that included infiltration of storm water in biofilters (previously this was excluded from preliminary efficiency calculations for this device). Numbers were computed using the Scoping study methodology. Rick Graff noted that the La Costa WB had two failures of sampling equipment. KLI replied that they were two different sampler units, and the failures were unrelated. KLI is working with Sigma to determine the problem with the equipment. It was noted that a higher level of vigilance will be provided for the wet basin to make sure that we get as many successful storms at the site as possible. KLI noted that at Palomar swale, the flow-measuring pipe was removed and the flow sensor mounted directly to the concrete because debris was routinely blocking the pipe. It was confirmed that sheet flow to the Palomar swale will be estimated and its loading added to the point influent loading in final calculations. Rich Horner noted that we had a problem with adopt a highway cutting the biofilter at the site. KLI responded that the site has now been signed. Rich Horner also noted that the media filter data were compromised by a late storm influent (La Costa SF). KLI responded that the data will be asterisked, and this will be accommodated in the calculations. Rich Horner asked that Caltrans come up with a solution to this problem and talk about it at the next bi-weekly conference call. Rick Graff noted that slope at the Melrose biofilter should not be shot with hydroseed again, we are not getting growth. Rick also inquired as to the pace of the wet basin regrowth and asked to have an estimate of the % coverage returned after the August harvest to discuss at the next bi-weekly call. **OMM Data**: Rick Graff asked for clarification of the 'travel' category. Law responded that it is the time spent in the car getting to the site. It was noted that the costs shown for maintenance are not meant to be used in the final report. Rather, the hours will be used to identify the effort required for each site/device. Plaintiffs were concerned about the extrapolation of the data. For example, it was noted that the administration hours are a big line item. Santa Monica BK inquired why are drain inlet inserts have such relatively high administration time. Law responded that they have a relatively high maintenance burden, and consequently have a high associated administration time. Operations category: Includes inspections, these are a significant part of total OM hours. Maintenance category: Large data range, from 1% to 78% of the total OM effort. But less than 15% of the hours are attributable to maintenance at about half the sites. 66% of the maintenance is scheduled (via the MID). Rich Horner asked that we note if there is scheduled maintenance that we deem unnecessary in the final				

ITEM	DESCRIPTION	STATUS	OPENED	DUE	ACTION FOR:
	report. Can we reduce the maintenance without hurting performance of the device? There are also significant differences between vector control costs in District 7 and District 11. It was noted that sand filter inspection requirements are relatively high. For biofilter swales, about 50% of the OM hours are administration, there is also a significant effort for watering biofilters in District 7. Possible Adjustments: Administration - get Caltrans general overhead numbers for other maintenance tasks. Assign plant establishment costs to construction rather than OM. VCD costs need to be normalized between vector districts. Eliminate specific outlier values for any category that appears suspect during the data reduction process. The Plaintiffs asked how we can resolve the maintenance effort requirements and how they will be incorporated into the final report. It was suggested to have a small subgroup to discuss this issue. Everett DeLano and Bill Evans to discuss this. BayKeeper to be kept informed on these exchanges (email)				
05	**Agenda Item No. 5 (Overview of Empirical Observations Data):** Rich Horner noted that this part of the study was his idea, and that he included it so that the study team would be alert for new information to help improve the operation and maintenance of the devices. There are probably some valuable observations recorded as a part of this program, and we need to find the significant items and report on them. RBF reviewed the empirical observation information and how the data reduction will proceed. The Plaintiffs agreed with the overall approach, and added that no special data reduction or compilations are necessary for the empirical observations. It was agreed to implement the suggestions given in the slides and have an example to discuss for the next meeting. The observations suggested would be done during one of the inspections in February. RBF to develop suggested changes for the other devices (changes to empirical observations, suggestions to EDBs were presented) and have them available at the next Quarterly meeting.	New	12/14/00	3/14/01	Caltrans/RBF
06	Note: Agenda Items 7 and 8 were presented ahead of Agenda Item 6				
07	**Agenda Item No. 7 (Final Report Development Update):** It was noted that the report Subcommittee met on 12/13, and discussed a draft outline. The Plaintiffs concurred with the outline and made several suggestions. The revised report outline will be distributed with the next bi-weekly report (1/4/01). Everett DeLano suggested that an executive summary be added to the report/outline.	New	12/14/00	1/4/01	RBF
08	**Agenda Item No. 8 (3rd Party Team Update):** There is an agreed upon summary table of cost issues, this was distributed to the 3rd party team. The 3rd party team must produce a progress report in 2-3	New	12/14/00	3/14/01	3rd Party Team

ITEM	DESCRIPTION	STATUS	OPENED	DUE	ACTION FOR:
	months from now, and in 6 months they must be done with the final report. Work by the 3rd party team was initiated on October 30th, 2000.				
09	**Agenda Item No. 6a (CDS Mosquito-proofing):** MW_C reported that the litter bag was replaced with a net (too small for mosquito entry), foam was installed to seal openings/cracks, and holes were sealed etc. Rich Horner inquired as to the result of the mosquito-proofing. Dean Messer indicated that the VCDs are optimistic that the new additions are working, but given the time of the year, they want to monitor the results during the spring when the vector problem is more acute. This issue will be followed-up at the next bi-weekly conference call.	New	12/14/00	1/4/01	LWA
010	**Agenda Item No. 6b (MCTT Covers):** Received 4 bids for the construction of the MCTT covers, selected the low bidder of $34,957. Law feels the low bidder understands the work and that the bid is good even though there is quite a spread between the bidders.	New	12/14/00	3/14/01	Law
011	**Agenda Item No. 6c (Metro/Paxton Schedule Update):** These two sites will not be operational this winter, and are scheduled for operation in the Fall of 2001. They could have challenges causing their completion to slip later than the currently scheduled 9/01.	Old	3/15/00	9/01	District 7
012	**Agenda Item No. 9 (Closing):** Next bi-weekly conference call scheduled for January 4, 2001 and next quarterly meeting scheduled for March 14, 2001 at RBF. Doug Failing noted that we were not going to be monitoring on Christmas and New Year holidays. After further discussion, it was agreed that the black out periods would be from noon Friday the 22nd until 8am Tuesday the 25th and on Saturday the 30th to midnight on day of first. Rick Graff wanted the critical sites (wetbasin) to be monitored on the Saturday before each holiday if possible.				

APPENDIX B: DHS INTERIM MOSQUITO PRODUCTION REPORT: "A PRELIMINARY ASSESSMENT OF VECTOR PRODUCTION"

Caltrans BMP Retrofit Pilot Studies

A Preliminary Assessment of Vector Production

Department of Health Services
Vector-Borne Disease Section

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Summary

In 1998, the California Department of Health Services, Vector-Borne Disease Section (CDHS-VBDS) entered into a Memorandum of Understanding with the California Department of Transportation (Caltrans) to provide technical expertise regarding vector production and vector-borne diseases relating to its stormwater Best Management Practice (BMP) Retrofit Pilot Study. The purpose of the Caltrans BMP Retrofit Pilot Study is to evaluate the efficacy of various structures designed to improve the quality of stormwater runoff before being discharged into natural waterways. BMPs potentially create a public health hazard by increasing habitat availability for aquatic stages of mosquitoes, and by creating harborage, food, and moisture for other vector, reservoir, and nuisance species including rodents and midges. An unintended consequence of BMP implementation could negatively impact operations of vector control and public health agencies.

It is the intent of the CDHS-VBDS / Caltrans agreement to identify, document and, where possible, prevent vector production and harborage at the BMP study sites. The agreement requires CDHS-VBDS to establish a comprehensive vector surveillance and monitoring program, develop vector abatement protocols, and recommend appropriate engineering modifications to BMP structures to reduce their potential to produce or harbor vectors.

CDHS-VBDS, in collaboration with four local mosquito and vector control agencies, is monitoring 37 BMPs at 31 sites in San Diego and Los Angeles Counties for mosquito abundance, vegetative cover, predators of immature mosquitoes, physical and chemical properties of water, and evidence of rodent and other vector populations. This information is being used to determine which factors within BMPs are most conducive to mosquito production and which species utilize these structures. To date, six mosquito species have been collected from Caltrans BMP structures, four of which are known vectors of human disease.

Of the nine different BMP technologies implemented by Caltrans, those with permanent sources of standing water (i.e. Multi-Chambered Treatment Trains (MCTT), Continuous Deflection Separators (CDS), and the wet basin) consistently produce

mosquitoes, often in large numbers relative to other BMP technologies. In contrast, biofiltration swales and strips, sand media filters, infiltration basins and trenches, drain inlet inserts, extended detention basins and the oil/water separator have generally produced few or no mosquitoes. This report provides a preliminary assessment of the potential public health risks involved with the construction of the Caltrans BMPs and addresses some problems that encourage vector production from data collected between early May 1999 and the end of September 2000.

Introduction

The importance of managing stormwater runoff is well known among transportation and stormwater management agencies across the country. Federal and state laws regulating stormwater runoff have several purposes including flood control, reduction of water pollution, and re-charge of underground aquifers. Stormwater systems serving these functions include retention and detention basins, swales, ditches, channels, vaults, and other structural devices.

Caltrans began an extensive program in 1997 to retrofit selected facilities with structural Best Management Practices (BMPs) in Los Angeles (District 7) and San Diego (District 11) Counties. The plan was to build 39 structures in 33 site locations to determine their cost effectiveness and water quality benefits (two sites are not yet completed). In 1998, the California Department of Health Services, Vector-Borne Disease Section (CDHS-VBDS) entered into a Memorandum of Understanding (MOU) with the California Department of Transportation (Caltrans) to provide technical expertise regarding vector[1] production and vector-borne diseases within its stormwater BMP Retrofit Pilot Study. The purpose of the Caltrans BMP Retrofit Pilot Study is to evaluate the efficacy of various structural designs retrofitted to selected facilities for improving the quality of stormwater runoff from freeways, interchanges, park and rides, and maintenance stations before being discharged into natural waterways. A consequence of this effort may be an increase in vector-related concerns brought about by increasing the habitat availability for aquatic stages of disease vectors, and by creating harborage, food, and moisture for other vector / reservoir species.

It is the intent of this agreement to protect public health by documenting and, where possible, mitigating vector production and harborage at the BMP pilot project sites. The agreement requires CDHS-VBDS to establish a comprehensive vector surveillance and monitoring study, develop vector abatement protocols, and recommend appropriate engineering modifications to Caltrans BMPs that would reduce

[1] Vector is defined in Health & Safety Code Section 402.1 “Vector,” as used in this article, is defined as any animal capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including but not limited to, mosquitoes, flies, other insects, ticks, mites, and rodents.

the potential for these structures to produce or harbor vectors. In addition to reviewing the BMP design and maintenance protocols, the role of CDHS-VBDS is to conduct studies that will identify which of these designs are conducive to vector production.

In accordance with the MOU, CDHS-VBDS staff have established comprehensive vector surveillance and monitoring plans for all BMP Pilot Project study sites in Los Angeles (Caltrans district 7) and San Diego (Caltrans district 11) Counties. The plans outlined various activities to be conducted in collaboration with Greater Los Angeles County Vector Control District, San Gabriel Valley Mosquito and Vector Control District, Los Angeles County West Vector Control District, and San Diego County Vector Control Program. The primary tasks of the local vector control agencies are weekly monitoring of all BMP Pilot Project study sites for immature stages of mosquitoes, midges, and sand flies. At the same time, CDHS-VBDS staff maintains an independent surveillance schedule to monitor immature mosquitoes, vegetative cover, predators of mosquito immatures, physical and chemical properties of water, and evidence of rodent and other vector populations.

In addition, a single vector abatement regimen was prepared by CDHS-VBDS and implemented by the collaborating vector control agencies. After evaluation of various mosquito larvicides, a liquid formulation of the insect growth regulator (IGR) methoprene (Altosid EC®: a juvenile hormone mimic that inhibits successful emergence of adult mosquitoes and a variety of midges) was recommended because of its short residual activity, extremely low environmental toxicity, and negligible effects on larval population dynamics. The local vector control agencies continue to implement this mosquito abatement procedure as needed.

Purpose and Objectives

The primary purpose of this study was to develop a better understanding of the vector problems associated with the different stormwater BMPs implemented by Caltrans. This document provides an update on the status of larval mosquito production in the structures of the Caltrans BMP Retrofit Study beginning in early May 1999 to the end of September 2000. The data presented encompasses several points regarding mosquito production including problem areas within BMP technology types, or within individual structures, and the effects of modifications performed to BMP structures in response to mosquito breeding.

Vector Issues

Prior to construction, Caltrans and others conducted extensive scoping and siting studies to determine the design criteria and appropriate sites for the BMPs, as well as site compatibility with the selected BMP technology type. A total of thirty-nine BMPs were planned based on the latest published design criteria. These BMPs were built on thirty-three sites (some sites contained more than one BMP) carefully selected to provide accurate data for each BMPs' retrofit requirements, which include construction costs, efficiency of constituent removal, and operation and maintenance requirements. Construction began in September 1998 and was almost entirely completed during the following six months. There are currently 37 operational BMPs (2 remain to be constructed in District 7) that are being monitored (Table 1). These include 24 in Los Angeles at 19 sites (Table 2), and13 in San Diego at 12 sites (Table 3).

BMP technologies used in the Caltrans BMP Retrofit Pilot Study can be divided into 9 categories based on their intended operation (Table 1). Each of these categories has provided unique challenges in preventing vector production. Structures such as the Caltrans BMPs have the potential to create suitable habitat for a variety of organisms including those classified as vectors. Mosquitoes in particular are highly opportunistic insect vectors that will colonize any source of standing water provided that there is at least some organic content that the larvae can feed upon. This is supported by the fact that all nine categories of BMP structures were found to harbor mosquito larvae at some point during the first year of the CDHS-VBDS / Local Vector Districts / Caltrans study.

Of the nine different BMP technologies implemented by Caltrans, those with permanent sources of standing water (i.e. Multi-Chambered Treatment Trains (MCTT), Continuous Deflection Separators (CDS), and the wet basin) consistently produce mosquitoes, often in large numbers relative to other BMP technologies. In contrast, biofiltration swales and strips, sand media filters, infiltration basins and trenches, drain inlet inserts, extended detention basins and the oil/water separator have generally produced few or no mosquitoes. This report provides a preliminary assessment of the potential public health risks involved with the construction of the Caltrans BMPs and addresses some problems that encourage vector production.

Table 1. Structural Best Management Practice (BMP) technologies used in the Caltrans BMP Retrofit Pilot Study designed for treating non-point source pollution in stormwater runoff.

BMP Technology-Type	Site Name	Water Quality Site Number
Wet Basin	I-5/La Costa Ave. (east)	111104
Extended Detention Basins (EDB)	I-5/I-605	74101
	I-605/SR 91 intersection	74102
	I-5/SR 56	111101
	I-15/SR 78	111102
	I-5 Manchester Ave. (east)	111105
Drain Inlet Inserts (DII)	Foothill Maintenance Station	73216
	Rosemead Maintenance Station	73218
	Las Flores Maintenance Station	73217
Infiltration Basins and Trenches	Altadena Maintenance Station[a]	73211a,b
	Carlsbad Maintenance Station (east)[a]	112207a,b
	I-605/SR 91[b]	73101
	I-5/La Costa Ave. (west)[b]	111103
Oil/Water Separators	Alameda Maintenance Station	74201
Media Filters	Eastern Regional Maintenance Station[c]	74202
	Foothill Maintenance Station[c]	74203
	Termination Park and Ride[c]	74204
	SR 78/I-5 Park and Ride[c]	112204
	La Costa Park and Ride[c]	112203
	Escondido Maintenance Station[d]	112202
	Kearny Mesa Maintenance Station[e]	112201
Multi-Chambered Treatment Trains (MCTT)	Via Verde Park and Ride	74206
	Lakewood Park and Ride	74208
Continuous Deflection Separators (CDS)	I-210 east of Orcas Ave.	73102
	I-210 east of Filmore Ave.	73103
Biofiltration Swales and Strips	I-5/Palomar Airport Rd.[f]	112206
	SR 78/Melrose Dr.[f]	112205
	I-605 Del Amo Ave.[f]	73225
	I-5/I-605[f]	73224
	Cerritos Maintenance Station[f]	73223
	I-605/SR 91[f]	73222a,b
	I-605/SR 91[g]	73222a,b
	Altadena Maintenance Station[g]	73211a,b
	Carlsbad Maintenance Station (west)[g]	112207a,b

[a]Infiltration Trench; [b]Infiltration Basin; [c]Austin-Type Media Filter; [d]Delaware-Type Media Filter; [e]Canister-Type Media Filter; [f]Biofiltration Swales; [g]Biofiltration Strips

Table 2. BMP structures constructed in Los Angeles, Caltrans District 7, for the Caltrans BMP Retrofit Piolt Study.

BMP Technology-Type	Site Name	Water Quality Site Number
Extended Detention Basins (EDB)	I-5/I-605	74101
	I-605/SR 91 intersection	74102
Drain Inlet Inserts (DII)	Foothill Maintenance Station	73216
	Rosemead Maintenance Station	73218
	Las Flores Maintenance Station	73217
Infiltration Basins and Trenches	Altadena Maintenance Station[a]	73211a,b
	I-605/SR 91[b]	73101
Oil/Water Separators	Alameda Maintenance Station	74201
Media Filters	Eastern Regional Maintenance Station[c]	74202
	Foothill Maintenance Station[c]	74203
	Termination Park and Ride[c]	74204
Multi-Chambered Treatment Trains (MCTT)	Via Verde Park and Ride	74206
	Lakewood Park and Ride	74208
Continuous Deflection Separators (CDS)	I-210 east of Orcas Ave.	73102
	I-210 east of Filmore Ave.	73103
Biofiltration Swales and Strips	I-605 Del Amo Ave.[d]	73225
	I-5/I-605[d]	73224
	Cerritos Maintenance Station[d]	73223
	I-605/SR 91[d]	73222a,b
	I-605/SR 91[e]	73222a,b
	Altadena Maintenance Station[e]	73211a,b

[a]Infiltration Trench; [b]Infiltration Basin; [c]Austin-Type Media Filter; [d]Biofiltration Swales; [e]Biofiltration Strips

Table 3. BMP structures constructed in San Diego, Caltrans District 11, for the Caltrans BMP Retrofit Piolt Study.

BMP Technology-Type	Site Name	Water Quality Site Number
Wet Basin	I-5/La Costa Ave. (east)	111104
Extended Detention Basins (EDB)	I-5/SR 56	111101
	I-15/SR 78	111102
	I-5 Manchester Ave. (east)	111105
Infiltration Basins and Trenches	Carlsbad Maintenance Station (east) [a]	112207a,b
	I-5/La Costa Ave. (west)[b]	111103
Media Filters	SR 78/I-5 Park and Ride[c]	112204
	La Costa Park and Ride[c]	112203
	Escondido Maintenance Station[d]	112202
	Kearny Mesa Maintenance Station[e]	112201
Biofiltration Swales and Strips	I-5/Palomar Airport Rd. [f]	112206
	SR 78/Melrose Dr. [f]	112205
	Carlsbad Maintenance Station (west)[g]	112207a,b

[a]Infiltration Trench; [b]Infiltration Basin; [c]Austin-Type Media Filter; [d]Delaware-Type Media Filter; [e]Canister-Type Media Filter; [f]Biofiltration Swales; [g]Biofiltration Strips

Several different species of larval mosquitoes have been collected during this study (Table 4). Three genera of mosquito larvae, *Culex*, *Culiseta*, and *Anopheles*, were collected and identified by CDHS-VBDS and the four collaborating vector control districts. The genus *Culex* was represented by three species (*Cx. quinquefasciatus*, *Cx. tarsalis*, and *Cx. stigmatosoma*), the genus *Culiseta* by two species (*Cs. incidens* and *Cs. inornata*), and the genus *Anopheles* by a single species (*An. hermsi*). Many of these mosquitoes are competent and important vectors of diseases that can be transmitted to humans. *Culex* mosquitoes are commonly vectors of viruses. For example, *Cx. pipiens*, a closely related species to *Cx. quinquefasciatus*, is considered to be the primary vector of West Nile Virus in the eastern United States. In California, *Cx. tarsalis* is the primary vector of St. Louis encephalitis (SLE) and western equine encephalomyelitis (WEE) whereas *Cx. quinquefasciatus* plays a secondary role in the transmission of SLE, particularly in urban areas. *Cx. stigmatosoma* is a competent

vector of both SLE and WEE to wild animals, thus maintaining the disease in nature through the enzootic cycle. In contrast, *Anopheles* mosquitoes are the primary vectors of malaria throughout the world. *An. hermsi* has been associated with sporadic outbreaks of malaria in southern California and was responsible for an outbreak in San Diego in the mid 1980's.

Table 4. Species of mosquitoes collected and identified from BMP structures used in the Caltrans BMP Retrofit Pilot Study.

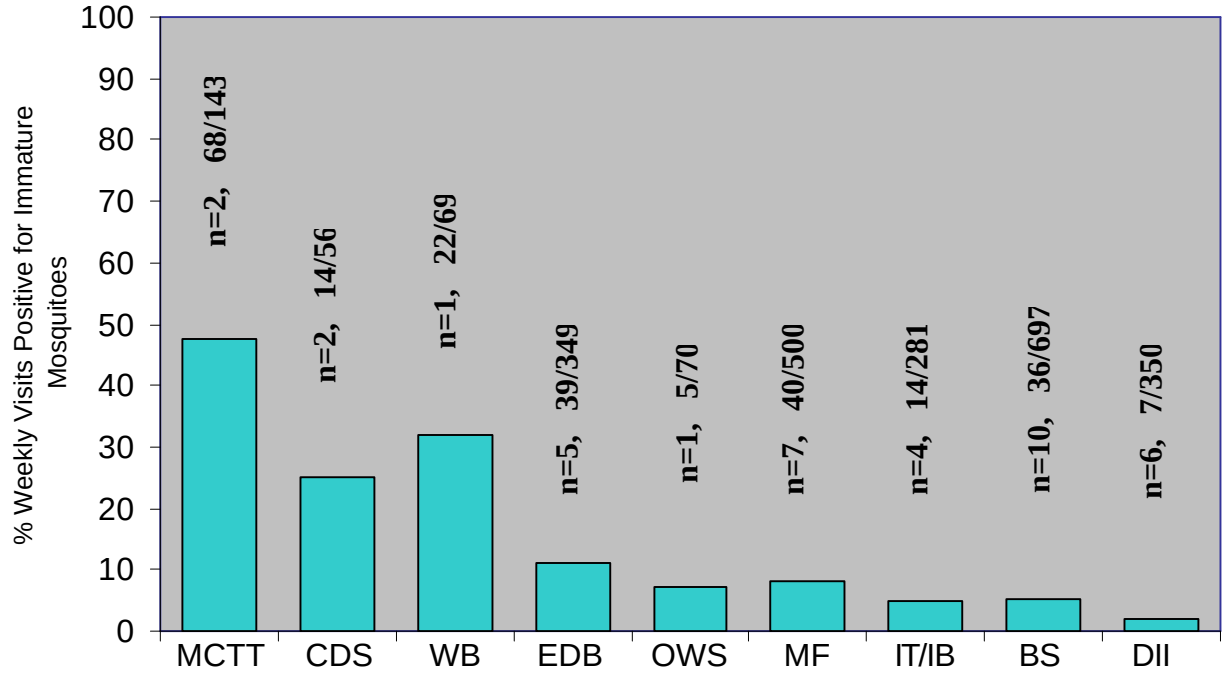
Genus	species
Culex	(*pipiens*) *quinquefasciatus*[a]
	tarsalis[a]
	stigmatosoma[a]
Culiseta	*incidens*
	inornata[c]
Anopheles	*hermsi* [b,c]

[a]Vector of encephalitis viruses including St. Louis encephalitis (SLE) and western equine encephalomyelitis (WEE).
[b]Vector of human malaria parasites.
[c]Only collected in San Diego County, Caltrans District 11.

An interim assessment of vector mosquito production at the different BMP technologies constructed by Caltrans for their BMP Retrofit Pilot Study is presented in the pages that follow. Data presented covers the time period between early May 1999 and the end of September 2000. During this time, sites were monitored for immature mosquitoes on a weekly basis by local vector control agencies. Data in line graphs are based on the average number of immature mosquitoes collected by weekly "dip" sampling over the course of a month. To obtain a dip sample, a one-pint cup attached to a long stick is used to collect a standard volume of source water that may or may not contain immature mosquitoes. If immature mosquitoes are discovered in the sample, they can be 1) identified to species, 2) examined for developmental stages, and 3) counted. The number of immature mosquitoes collected in a dip is recorded as "immature mosquitoes per dip". Depending on the habitat or mosquito species present, alternative and more specialized means of collecting mosquitoes may be more

appropriate. Data presented in bar graphs summarizes the number of weekly visits to the BMP sites by vector control agencies where immatures were detected versus the total number of visits. Data presented in this manner demonstrates the overall use of each BMP structure by immature mosquitoes. A summary of immature mosquitoes sampled from different BMP technologies is summarized in Figure 1.

Figure 1. Weekly monitoring of BMP technology types in Caltrans District 7 and 11 positive for immature mosquitoes through Sept. 2000



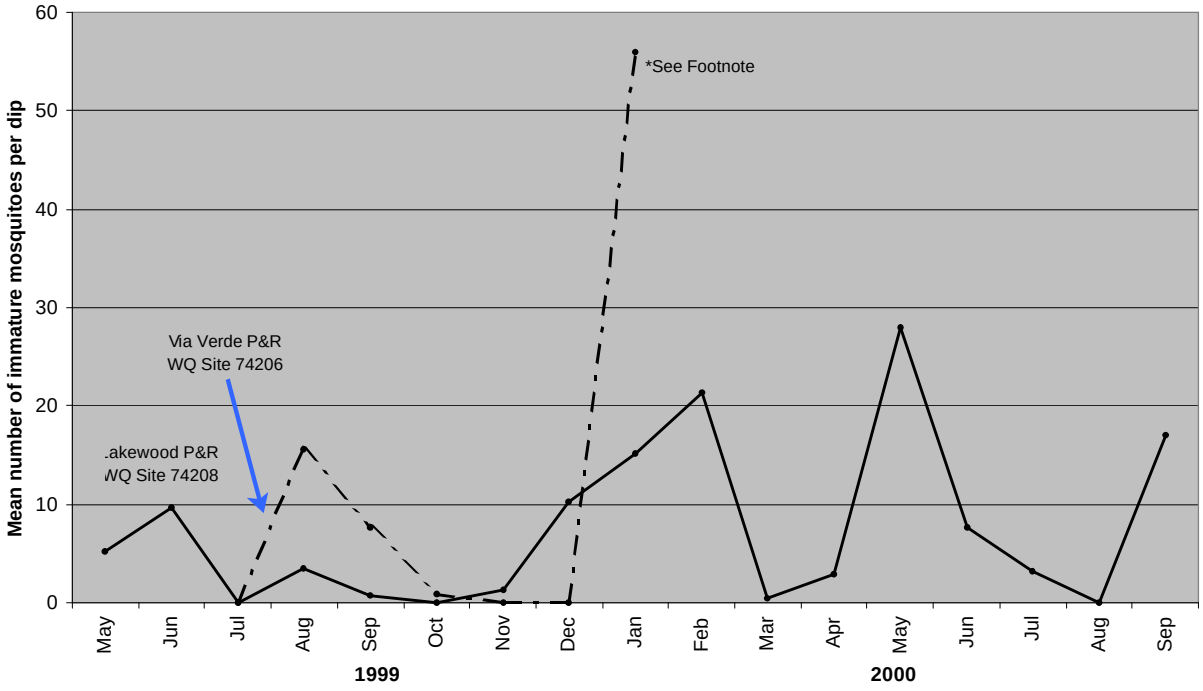
Multi-Chambered Treatment Trains (MCTT)

The Caltrans MCTTs have consistently produced more mosquitoes than the other BMPs in the Caltrans BMP Retrofit Pilot Study. These complex BMPs have several components that create optimal habitats for mosquito larvae. The primary factor is the standing water that remains within the settling basin. This source of water is needed for the unit to function properly during a storm event. However, during periods of no rain, this water, rich in organic debris, stagnates and becomes very attractive to egg laying female mosquitoes. In addition, the plastic settling tubes that cover the bottom of the settling chamber create hundereds of sheltered microhabitats that increase the suitability of this environment to the larval mosquitoes. Water in these units must be kept at a level several inches above the settling tubes in order for vector control personnel to accurately sample the water for larvae and abate them when needed. If the water falls below the level of the settling tubes, sampling and abatement practices become extremely difficult.

The MCTT structures have an additional source of mosquito breeding that has been impossible to access during the past year of operation by vector control personnel. The catch basin that feeds incoming stormwater into the settling basin retains a permanent pool of water. This water is located in a deep concrete vault, below a fiberglass grate that was covered by large bags of plastic aeration balls. It is likely that mosquitoes utilized this source of water at the MCTT sites.

Mosquito larvae have been sampled from both MCTTs (Figures 2 and 5). Mosquitoes identified from the site at Via Verde Park and Ride include *Cx. quinquefasciatus*, *Cx. stigmatosoma*, *Cx. tarsalis*, and *Cs. incidens.* Of 70 visits to this site between May 7, 1999 and September 29, 2000, larvae have been sampled on 22 (31%) occasions. In contrast, mosquitoes identified from the Lakewood Park and Ride site *include Cx. quinquefasciatus* and *Cs. incidens.* Of 73 visits to this site between May 20, 1999 and September 28, 2000, larvae have been sampled on 46 (63%) occasions. Together, these two sites have been found to produce mosquito larvae on 48% of the visits by vector control personnel.

Figure 2. Monthly collection of immature mosquitoes from individual Multi-Chambered Treatment Trains in Caltrans District 7.



*Mosquito samples from the Via Verde P&R (WQ Site No. 74206) site collected after January 27, 2000 by San Gabriel Valley Mosquito and Vector Control District have yet to be quantified.

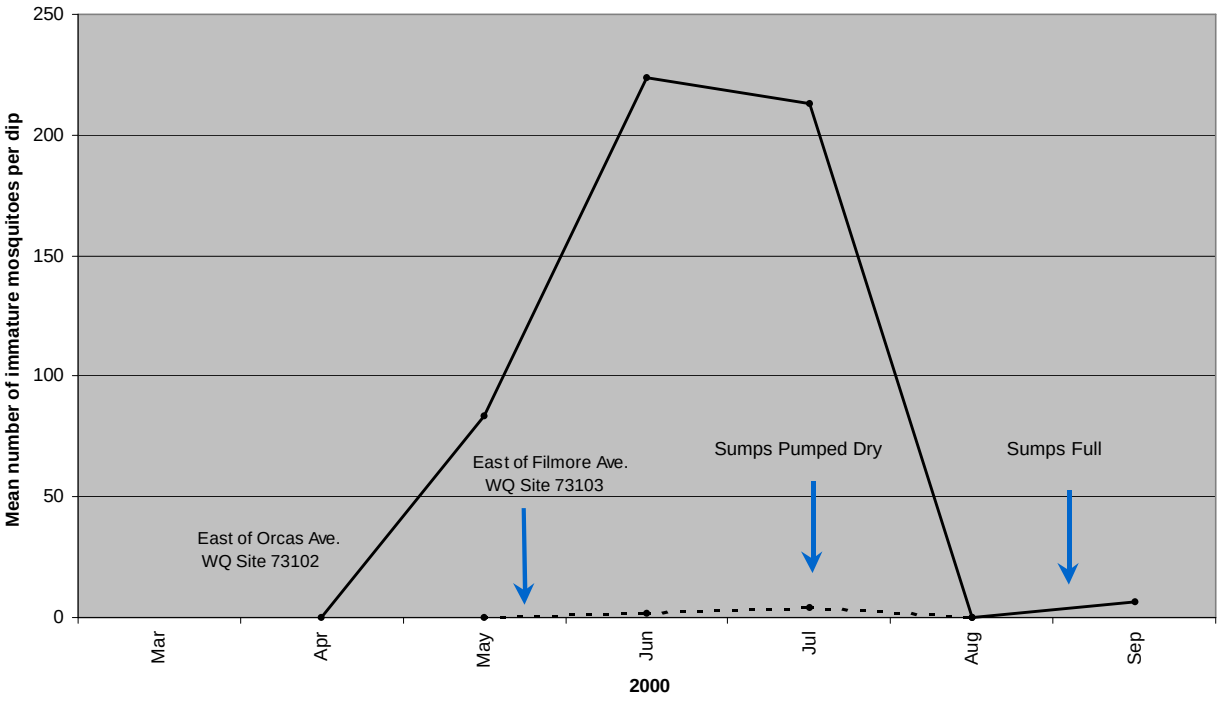
Continuous Deflection Separators (CDS)

The Caltrans CDS units have only been in place since March 2000. However, they have already established themselves as excellent breeding sources for mosquitoes because standing water is retained in the cylindrical vortex sump. CDS units, like the MCTT units discussed previously, require standing water in the sump in order to function correctly during a storm event. The result of this is a source of water rich in organic debris and excellent for mosquito larval development. Although the CDS sumps have covers, there are numerous means by which egg-laying female mosquitoes can access the water source. For instance, adult mosquitoes can reach the water by

moving through gaps between the lid and the sump, through the support holes in the side of the sump, or through the sumps' main water inlet and outlet holes.

The CDS units, in particular the East of Orcas Ave. site, have produced the highest numbers of larvae in a "dip" sample. At times, samples from a single dip sample at the East of Orcas site have exceeded 300 larvae (Figures 3 and 5). In the relatively short period of time these two units have been inspected (March 16, 2000 to September 29, 2000), larvae have been sampled on 14 of the 56 site visits (25%).

Figure 3. Monthly collection of immature mosquitoes from individual Continuous Deflector Separators in Caltrans District 7.



Wet Basin

The Caltrans wet basin was designed to treat incoming runoff water by acting as a biological filter and sedimentation basin. However, permanent pools of water quickly

become very complex biological systems of plants and animals, which in turn create unique mosquito problems that may become very severe under certain conditions. The best conditions for mosquito production in southern California's permanent pools of water occur when annual aquatic plants perish, fall, and clog shoreline habitats. Mosquito larval predators such as mosquitofish, *Gambusia affinis*, become excluded by plant barriers from these habitats and the decaying vegetation creates a rich organic media perfect for mosquito larvae. In addition, aquatic plants may produce similarly suitable habitats for mosquito larvae when they become dense and create pockets of water that are inaccessible to predators.

In its first year, the Caltrans wet basin has experienced dramatic changes that can occur in a permanent pool of water. Mosquitofish were introduced into the pond soon after it was completed (June 17 and 18, 1999) by the San Diego County Vector Control Program in an attempt to control immature mosquitoes that were already present. Invasive cattail plants grew rapidly and covered over 50% of the original surface area of the pool. By May of 2000, the cattail plants averaged over 2 meters in height and extended approximately 2 meters in width from the shoreline.

Two species of mosquito were collected from this site, *Cx. tarsalis* and *An. hermsi*. Larvae were generally found in small, isolated shoreline pockets of water among fallen cattails and accumulations of vegetation and plant debris. Out of 69 site visits by San Diego County vector control personnel between June 15, 1999 and September 25, 2000, mosquito larvae were detected on 22 (32%) occasions. In general, the number of larvae collected was small, as shown in Figure 4, but numbers were significant given the large surface area of the BMP (Figure 5).

Figure 4. Monthly collection of immature mosquitoes from La Costa Ave. (east) Wet Basin in Caltrans District 11 (WQ Site No. 111104).

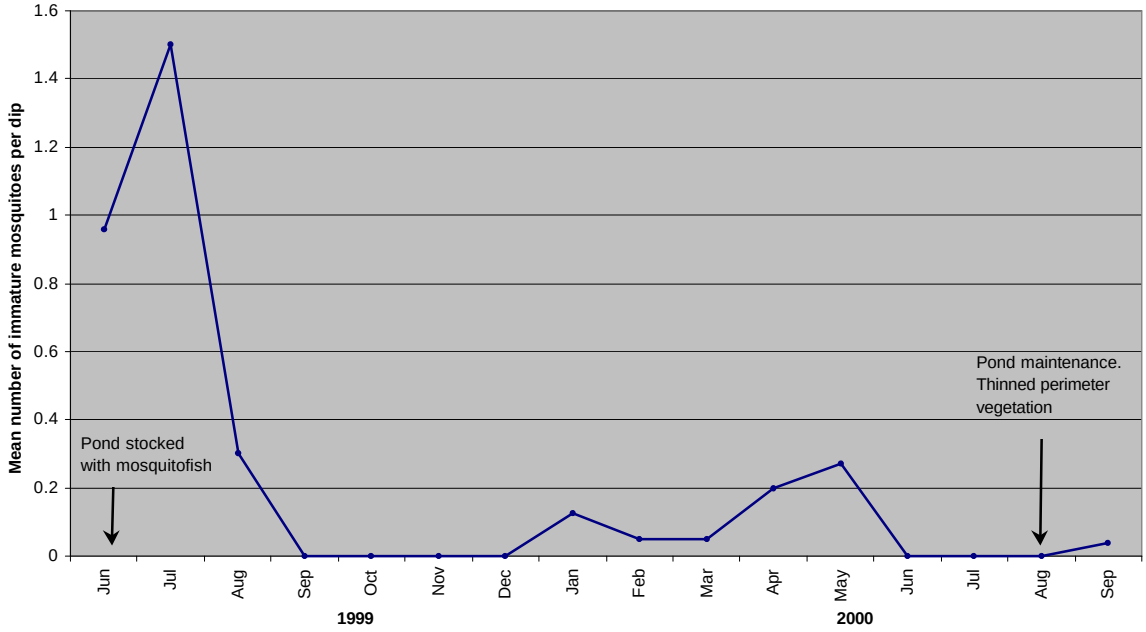
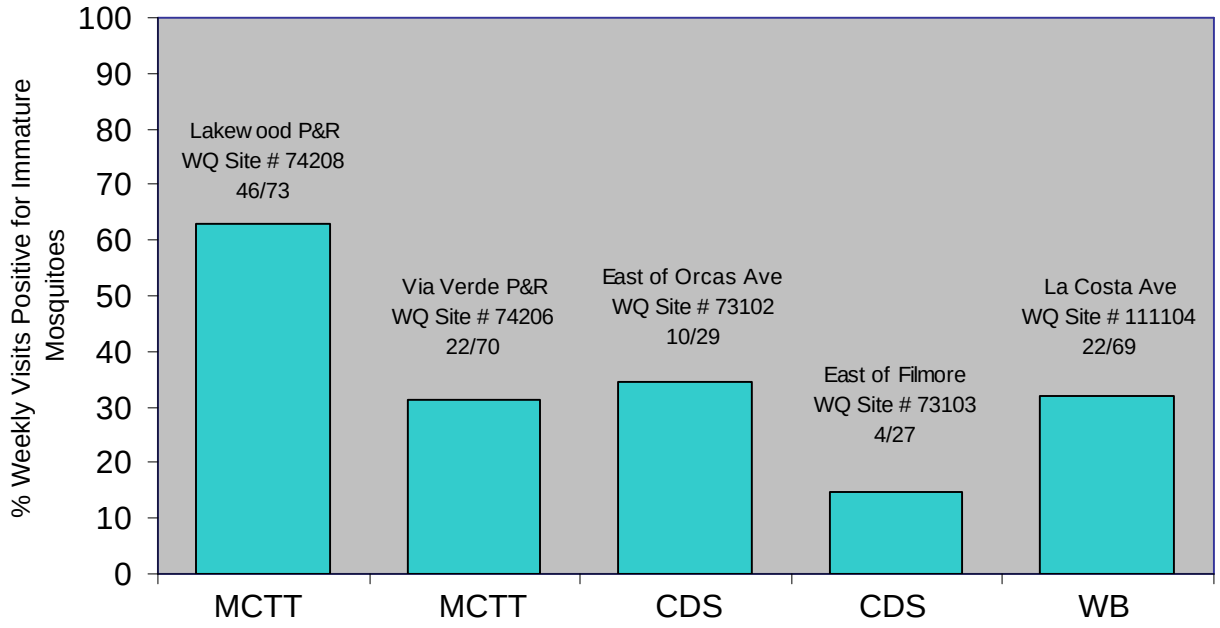


Figure 5. Weekly monitoring of individual Multi-Chambered Treatment Trains, Continuous Deflector separators, and the Wet Basin through Sept. 2000



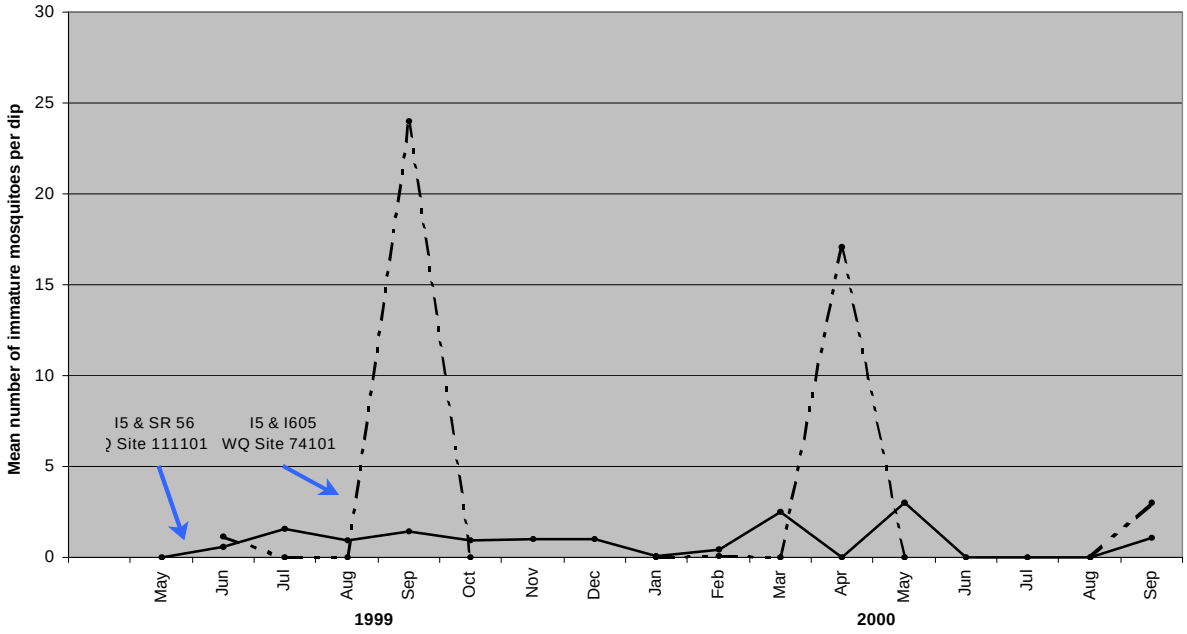
Extended Detention Basins (EDB)

The five Caltrans EDBs are all unique in size, shape, and overall design, thus rendering different habitats potentially suitable for immature mosquitoes. In general, Caltrans EDBs drained at prescribed rates; therefore, pools of standing water did not remain for more than a few days. Three of the EDBs are soil-lined and have not produced mosquito larvae during their first year of operation; however, mosquitoes were detected at the remaining two sites (Figures 6 and 7). The EDB site at the intersection of Interstate-5 and Interstate-605 in Los Angeles was built with a concrete-lined bottom that allowed water to stand in a sump long enough to produce suitable habitat for mosquitoes. Mosquitoes identified from this location were primarily of the genus *Culex* (*Cx. quinquefasciatus* and *Cx. tarsalis*), but one species of *Culiseta* (*Cs. incidens*) was also identified. Of 73 visits between June 2, 1999 and Sept 29, 2000, larvae were detected on six (8%) occasions.

The Sorrento Valley site in San Diego (Interstate 5 and SR-56 intersection) incorporated unique design features that are highly conducive to mosquito larvae

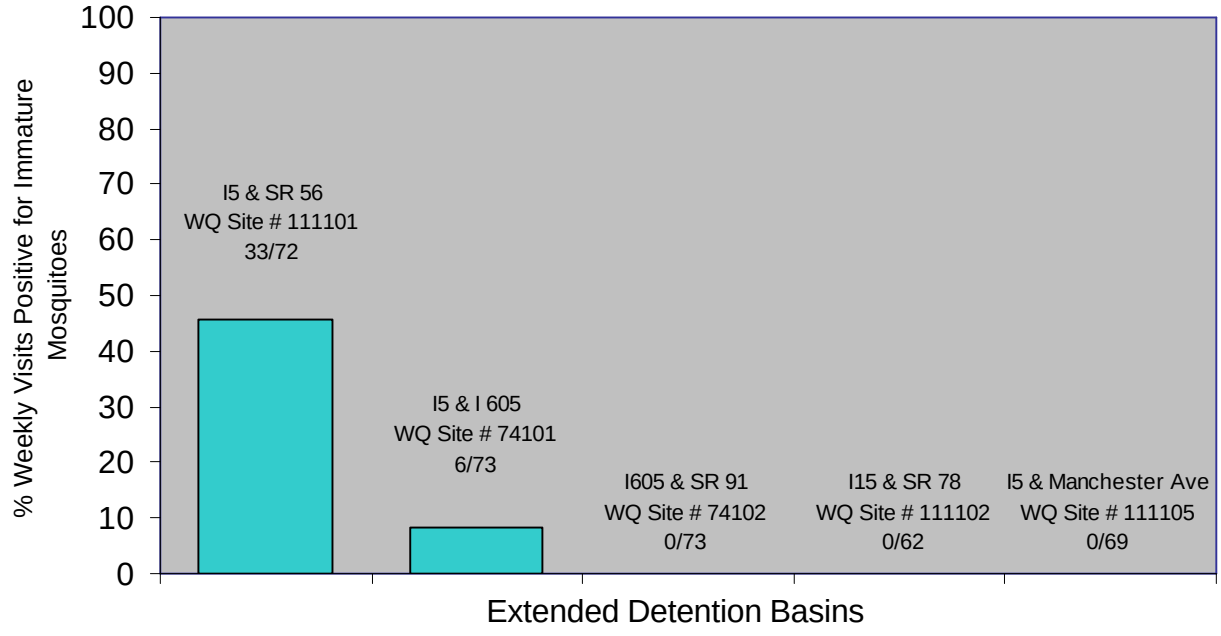
(Figure 2). This was the EDB that produced the most mosquitoes and was also the Caltrans BMP from which the most mosquito species were identified. Possibly due to its location adjacent to a wetland mitigation site, all six mosquito species discussed in this study (Table 4) were identified from standing water at this site. The main factor at this site is the large surface area containing rock "rip rap". Water entering this basin remains trapped between the rocks, creating a protected microhabitat for mosquitoes. This habitat not only protects larvae from potential predators and sunlight, but also effectively hides them from vector control inspectors and makes effective abatement difficult or impossible. Of 72 visits between May 5, 1999 and September 25, 2000, larvae were detected on 33 (46%) occasions.

Figure 6. Monthly collection of immature mosquitoes from Extended Detention Basins[1].



[1]To date, immature mosquitoes have not been detected in three Caltrans Extended Detention Basins. These include sites located at the I15 & SR 78 interchange (WQ Site No. 111102) and I5 & Manchester Ave. (WQ Site No. 111105) in Caltrans District 11, and the site located at the I605 & SR 91 interchange (WQ Site No. 74102) in Caltrans District 7.

Figure 7. Weekly monitoring of individual Extended Detention Basins through Sept. 2000



Media Filters

The three types of media filters implemented by Caltrans (Austin, Delaware, and canister) are very different and as such, have to be evaluated separately.

Austin-Type. In general, the Austin-type sand media filters have drained at prescribed rates; however, mosquitoes have utilized small areas that hold standing water within these structures. In particular, the spreader troughs located on the sand-media side of the structures have had a tendency to hold standing water. Those units built in District 11 have three additional depressions (to clear PVC pipes) within the spreader troughs that hold additional water. In addition, the Termination Park and Ride site in District 7, has had a tendency to hold standing water in a corner of the settling basin in addition to the spreader trough, resulting in an additional source of mosquito production within the unit. Because of these sources of water, mosquitoes have been found at all of the Austin-type units. Of 356 visits to the five sites between May 5, 1999 and September 29, 2000, mosquitoes were sampled on 28 (8%) occasions. The number of larvae collected during visits by vector control personnel are summarized in Figures 8-10 and 13.

Delaware-Type. The Delaware-type media filter is located underground, covered by heavy steel doors. However, small gaps between the individual doors have allowed adult mosquitoes to enter and utilize shallow water sources that remain in the settling chamber side of the unit following storm events. This shallow water, often less than 1 cm deep has produced mosquito larvae on several occasions despite its relatively cryptic location below ground (Figures 11 and 13). Of 71 visits between May 5, 1999 and September 25, 2000, larvae have been sampled on four (6%) occasions.

Canister-Type. The canister-type media filter is located below ground similarly to the Delaware-type unit. This structure is covered by spring-loaded aluminum doors. As mentioned for the Delaware-type unit, the doors do not create perfect seals, and small holes remain that can be utilized by adult mosquitoes to access the sources of water found below. The canister-type unit has unique features not found in other media filter designs. These include an initial catch basin vault chamber that leads to 3 separate filter chambers that fill sequentially, depending on the amount of water produced by the storm event. Each filter chamber is also equipped with a spreader trough and energy

dissipater at the entrance side serving to slow the incoming water flow. The catch basin and the spreader troughs hold water until it evaporates. Of 73 visits between May 5, 1999 and September 25, 2000, mosquitoes have been sampled on 8 (11%) occasions (Figures 12-13). Interestingly, larvae have only been found in the initial catch basin vault and in the spreader trough of the first filter chamber. The relative difficulty in accessing the water below the aluminum door covers may have had some effect on colonization by mosquitoes. Alternatively, the presence of thousands of copepods in the water at this site during certain times of the year may be limiting the ability of mosquito larvae to survive in this habitat.

Figure 8. Monthly collection of immature mosquitoes from Austin-Type Sand Media Filters.

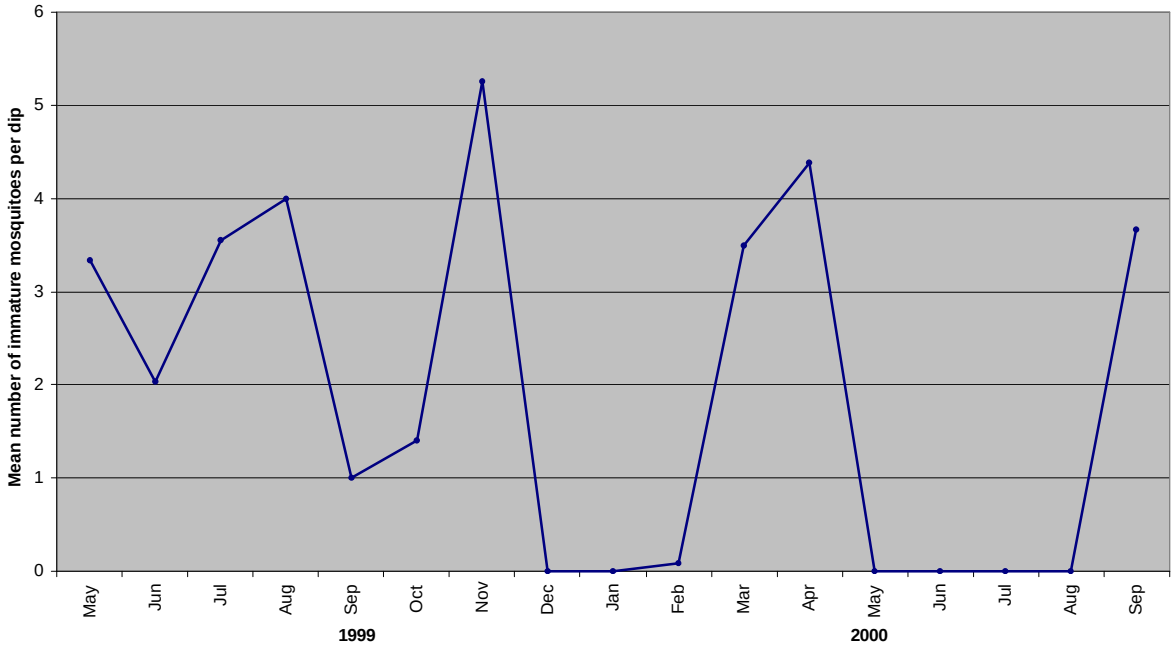


Figure 9. Monthly collection of immature mosquitoes from individual Austin-Type Sand Media Filters in Caltrans District 7.

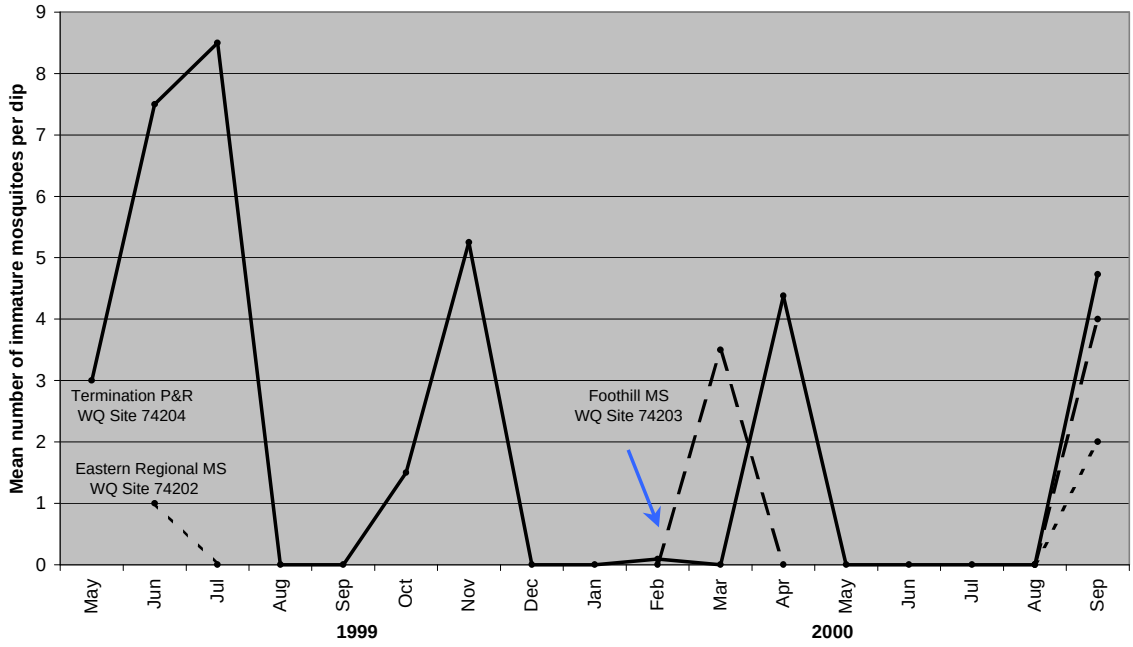


Figure 10. Monthly collection of immature mosquitoes from individual Austin-Type Sand Media Filters in Caltrans District 11.

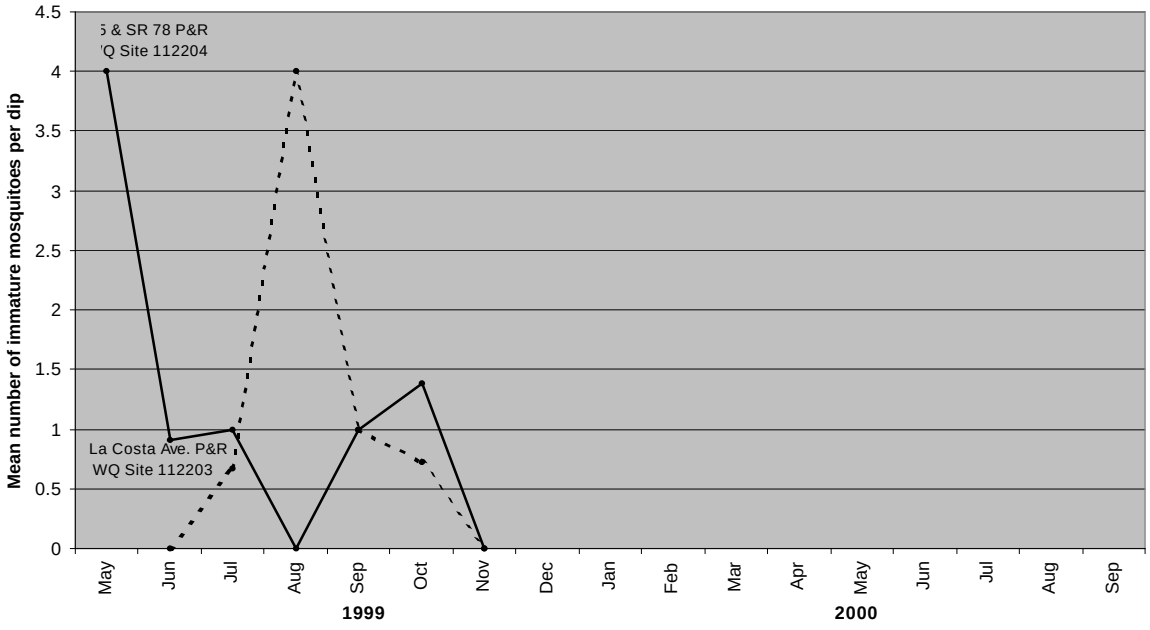


Figure 11. Monthly collection of immature mosquitoes from Escondido Maintenance Station Delaware-Type Sand Media Filter in Caltrans District 11 (WQ Site No. 112202).

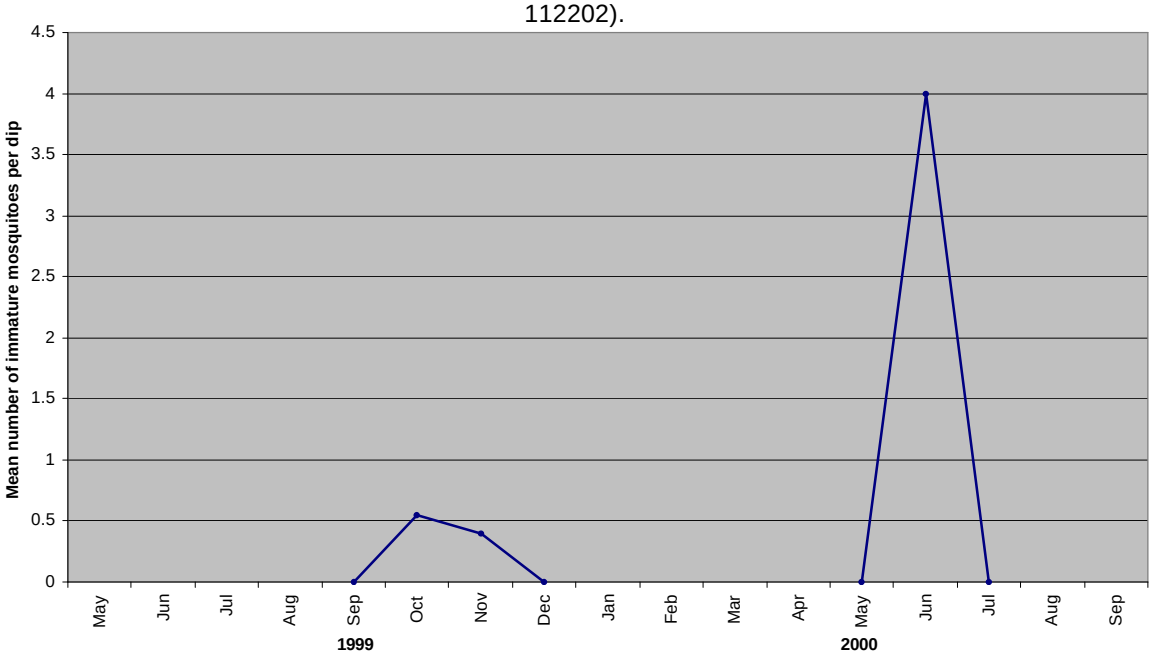


Figure 12. Monthly collection of immature mosquitoes from Kearny Mesa Maintenance Station Canister-Type Media Filter (pearlite/zeolite) in Caltrans District 11 (WQ Site No. 112201).

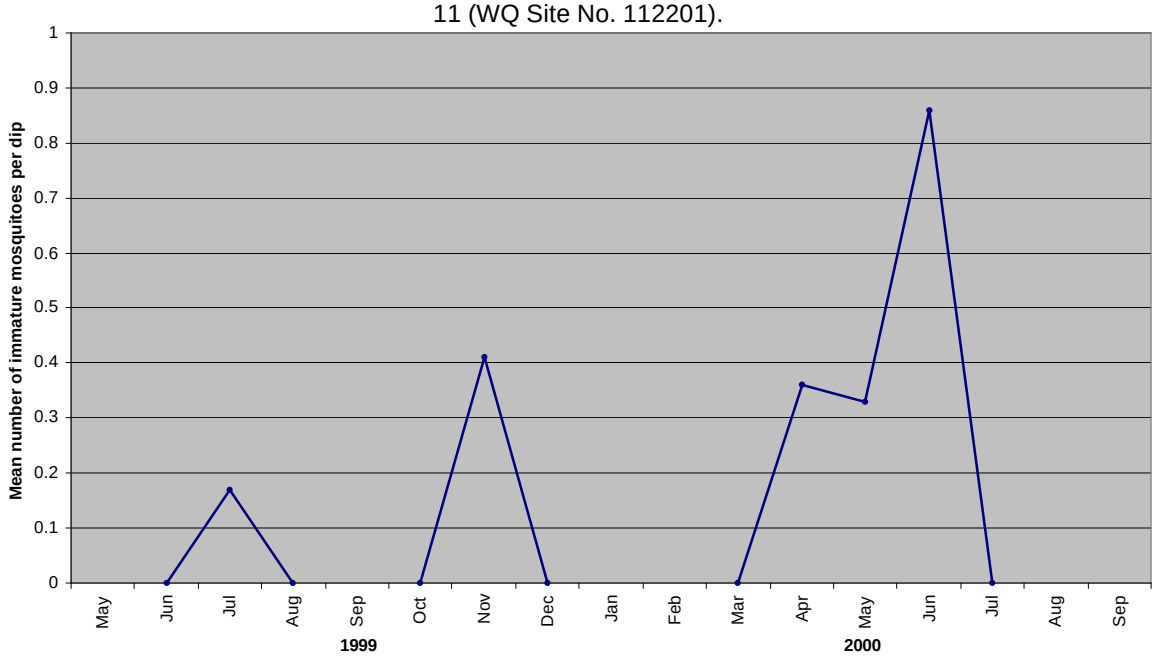
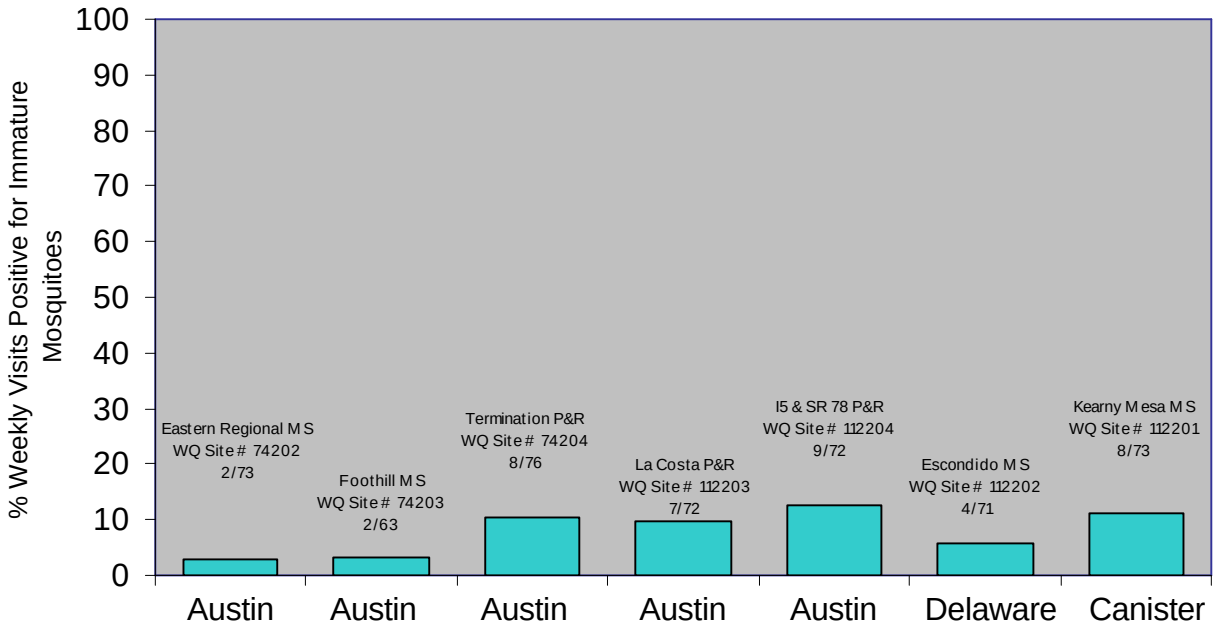


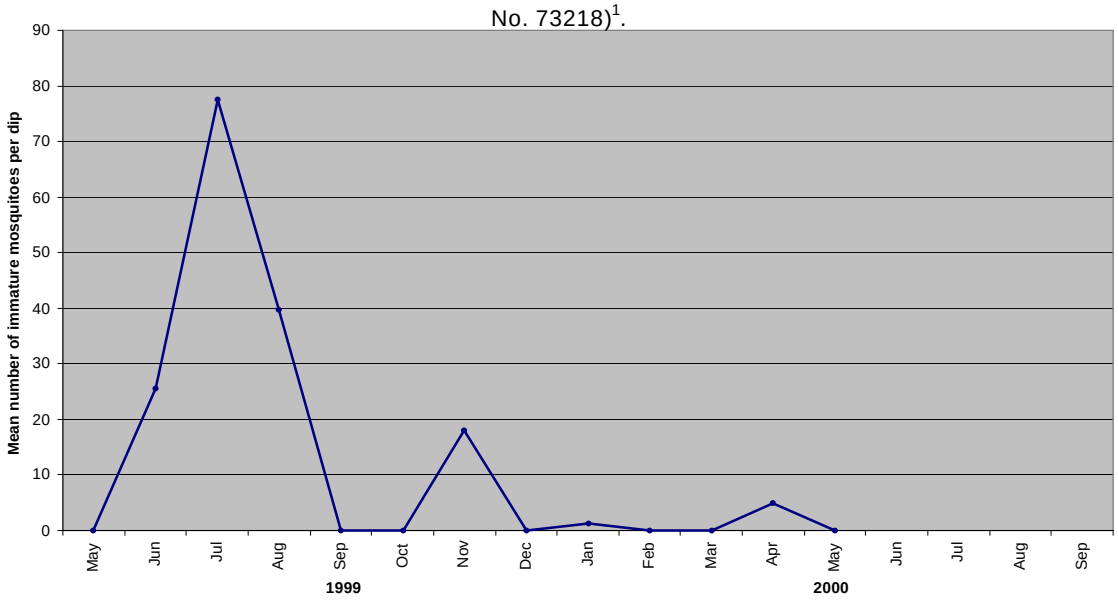
Figure 13. Weekly monitoring of individual Media Filters including Austin-Type, Delaware-Type, and Canister-Type through Sept. 2000



Drain Inlet Inserts (DII)

Stormwater that passes through the Caltrans DII units flows directly into the storm drain system. Although storm drains can and do produce mosquito larvae in pools of underground standing water, the Caltrans DII units do not appear to create habitat suitable for mosquito larvae. The only mosquito habitat noted occurs in the plastic flume used to house the effluent measuring devices. *Cx. tarsalis*, *Cx. stigmatosoma*, and *Cx. quinquefasciatus* have been collected from this plastic flume of the Fossil Filter® at the Rosemead Maintenance Station (Figures 14 and 16). Of 70 visits to this site between May 7, 1999 and September 29, 2000, mosquito larvae were sampled on seven (10%) occasions. Even though the underground plastic flume would not be incorporated into future DII units, these data demonstrate the persistence and ability of mosquitoes to utilize even the most remote sources of water. To date, immature mosquitoes have not been detected in association with Drain Inlet Inserts installed at the Las Flores Maintenance Station (WQ Site No. 73217) or at the Foothill Maintenance Station (WQ Site No. 73216) sites in Caltrans District 7.

Figure 14. Monthly collection of immature mosquitoes from Rosemead Maintenance Station Drain Inlet Insert (Fossil Filter) in Caltrans District 7 (WQ Site No. 73218)[1].



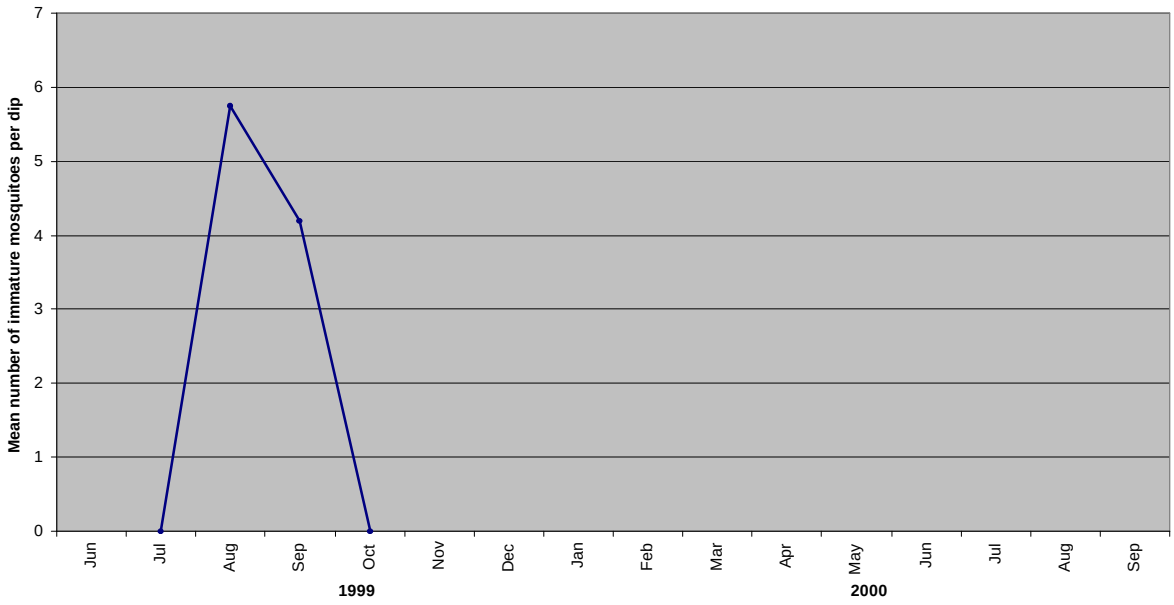
[1]Immature mosquitoes at this site were only collected from water standing in the plastic outlet flume of the Fossil Filter® used to take water samples. To date, immature mosquitoes have not been detected in association with the Stream Guard® Drain Inlet Insert at this site.

Oil/ Water Separator

The Caltrans oil/water separator itself is probably not a candidate for mosquito production. The sealed construction and the oils that the unit is designed to trap should preclude mosquitoes. However, channels leading into and out of the unit can provide habitat for mosquito larvae if standing water is allowed to accumulate. Similar to the Caltrans DII units, the only mosquito habitat at this site was created by the plastic flume used to house the effluent measuring devices that are located below a wooden cover. Both *Cx. tarsalis* and *Cx. quinquefasciatus* were collected from standing water in this plastic flume. Of 70 visits to this site between June 1, 1999 and September 29, 2000, mosquito larvae were sampled on five (7%) occasions (Figures 15-16). As mentioned

for the DII units, the plastic flume would not be incorporated into future oil/water

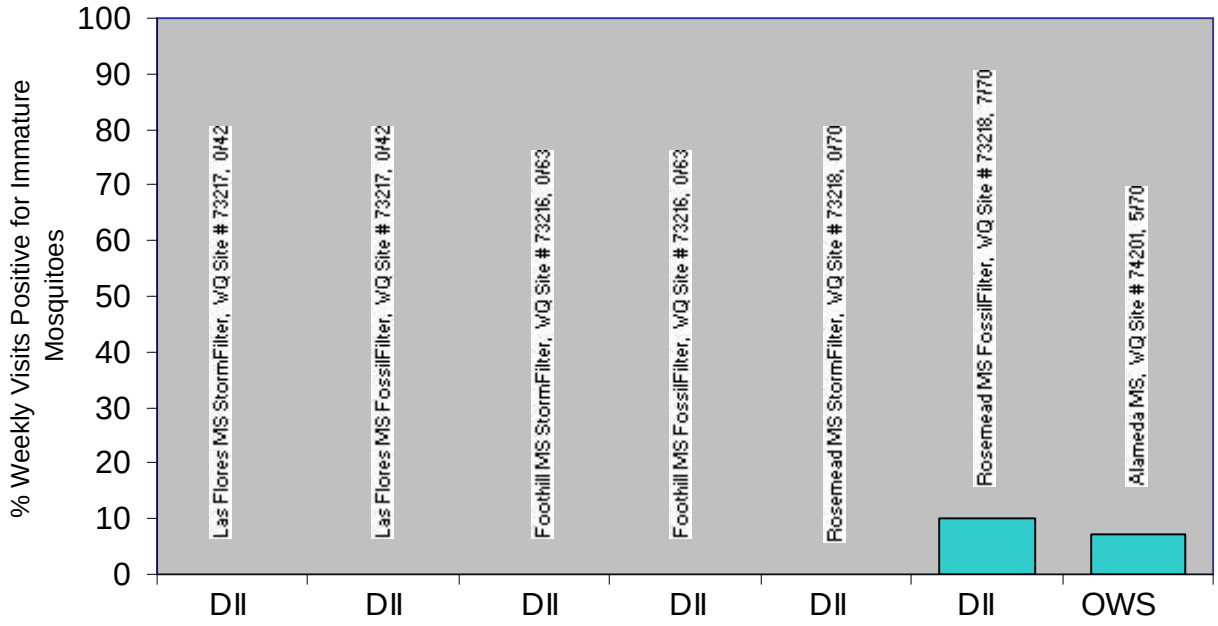
Figure 15. Monthly collection of immature mosquitoes from Alameda Maintenance Station Oil-Water Separator in Caltrans District 7 (WQ Site No. 74201)[1].



separator units, but these data again demonstrate the persistence of mosquitoes.

[1]Immature mosquitoes at this site were only collected from water standing in the plastic outlet flume used to take water samples.

Figure 16. Weekly monitoring of individual Drain Inlet Inserts and the Oil/Water Separator through Sept. 2000



Infiltration Basins and Trenches

The Caltrans infiltration units are both designed with the same principle of allowing water to percolate back into the soil. Both infiltration trenches piloted in this study are covered by a thick layer of gravel or aggregate matrix. Due to the depth of this matrix layer in combination with rapid percolation rates, no standing water has ever been recorded above ground at these sites. Adult mosquito emergence traps have been placed randomly above the aggregate matrix at the Altadena Maintenance Station to determine if mosquitoes are moving down between the rocks and reproducing in hidden pockets of standing water. However, to date, no mosquitoes have been detected.

The infiltration basins have the potential to create mosquito problems because water entering these units remains above ground until it percolates into the soil. Water entering the basin located at the interchange of Interstate-605 and SR 91 has percolated rapidly during its first year of operation. However*, Cx. quinquefasciatus* larvae were detected in an inlet pipe catch basin that held standing water between June 29th and August 24th, 1999. This catch basin was subsequently filled in with cement on September 29, 1999 and no mosquito larvae have been noted in or around this infiltration basin site since. If the percolation rates at this site decrease over time, resulting pools of standing water have the potential to create habitats for larval mosquitoes.

The infiltration basin located at La Costa avenue in District 11 was build near a brackish water lagoon along the coast. The water table at this site fluctuates, but generally remains very high. Because of this, percolation rates have been extremely slow, resulting in a semi-permanent pool of water. Initially, mosquitofish were stocked into this pool of water to control mosquitoes, however the fish died out when the pool dried out in mid-August, 1999. It was decided not to re-stock this pool with fish in the future. In the absence of mosquitofish, other predators such as dragonfly larvae, water beetles, and backswimmers have flourished at this site when water was present and likely reduced the number of mosquito larvae. However, mosquito larvae were frequently sampled at this site during the late winter and spring of 2000, and were often very abundant (Figures 17-18). Four species of mosquitoes were sampled at this site

including *Cx. quinquefasciatus*, *Cx. stigmatosoma*, *Cx. tarsalis*, and *An. hermsi*. Of 70 visits between May 5, 1999 and September 25, 2000, mosquito larvae were sampled on 14 (20%) occasions.

Figure 17. Monthly collection of immature mosquitoes from I-5 & La Costa Ave. (west) Infiltration Basin in Caltrans District 11 (WQ Site number 111103).

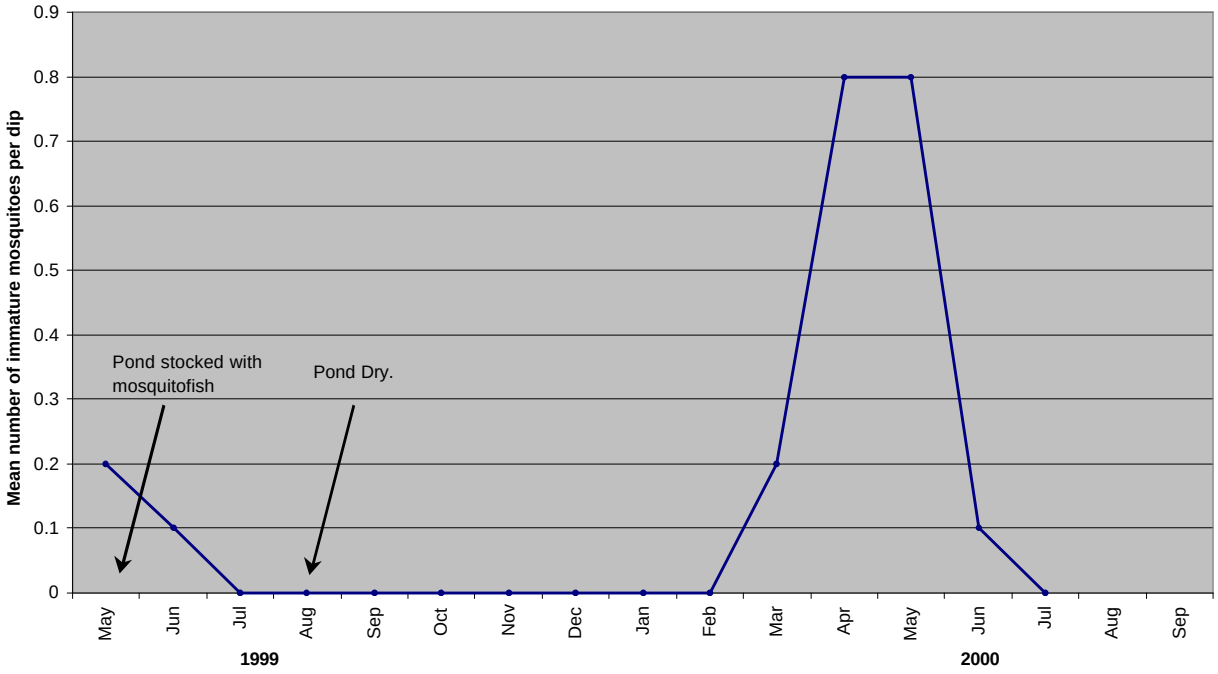
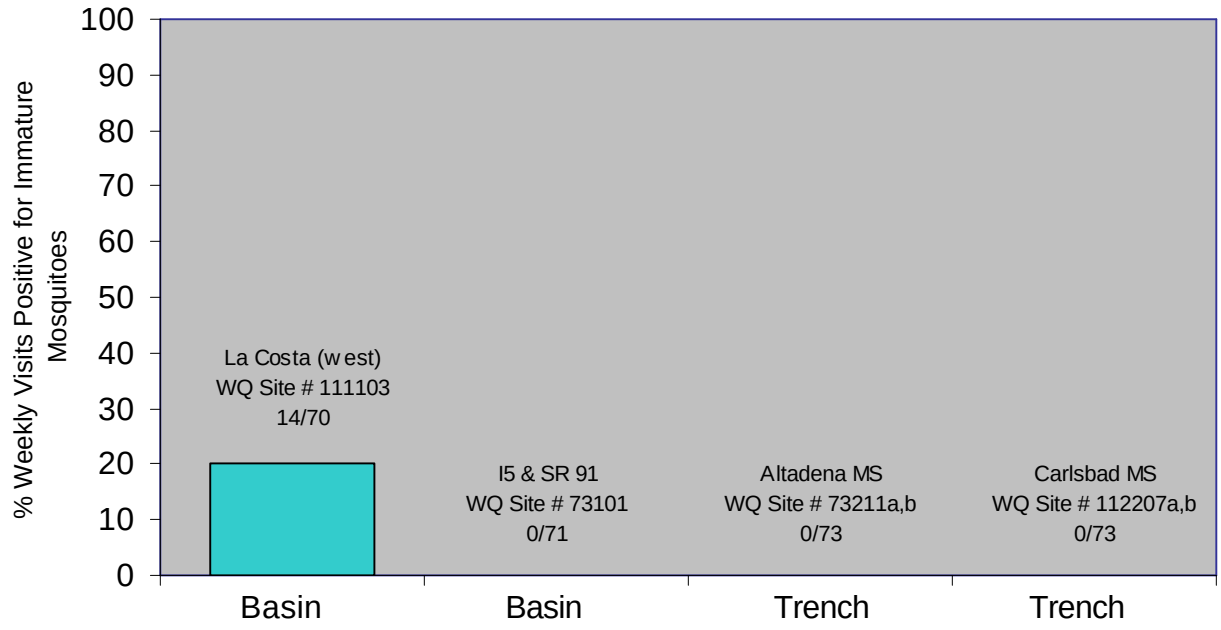


Figure 18. Weekly monitoring of individual Infiltration Basins and Trenches through Sept. 2000



Biofiltration Swales and Strips

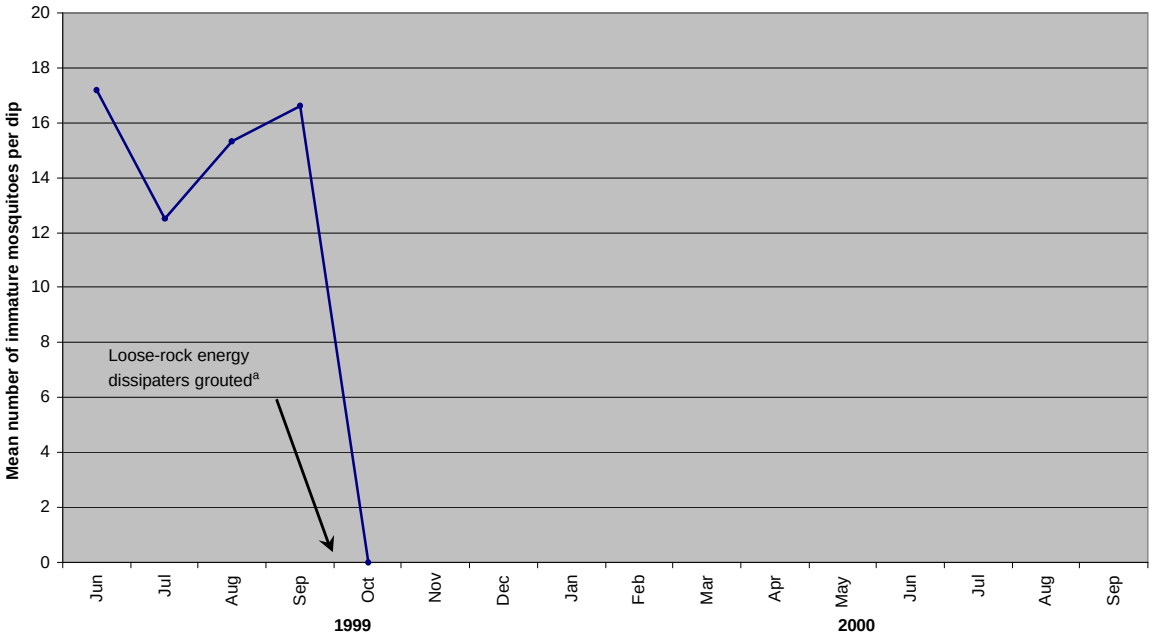
Caltrans has implemented 6 biofiltration swales and 4 biofiltration strips into their BMP Retrofit Pilot Study. These units all function using the same vegetation filtration principle, but each site is slightly different. Two of the sites, Altadena and Carlsbad Maintenance Stations, have biofiltration strips that are utilized as "pre-filters" to infiltration trenches. However, this does not change their function as individual filtering units. The other units are designed to work alone.

During the first few months of operation, the biofiltration swales in Caltrans District 7 incorporated energy dissipaters containing rip rap. The concrete sumps built to hold the rocks also retained water following storm events and/or irrigation and became sources of mosquito larvae. In late September and early October of 1999, these energy dissipaters were modified by filling the rock-filled sumps with concrete and imbedding the rocks into it. This allowed the energy dissipaters to continue their intended function, but prevented the accumulation of standing water. Prior to October

1999, mosquitoes were sampled from rip rap areas in the four District 7 sites (Interstate 605 / SR 91 interchange, Cerritos Maintenance Station, Interstate 5 / Interstate 605 interchange, and Interstate 605 Del Amo Ave.), (Figures 19-20 and 22). Species identified from these sites included *Cx. quinquefasciatus*, *Cx. tarsalis*, *Cx. stigmatosoma*, and *Cs. incidens*. Since October 1999, no other sources of mosquito larvae have been detected at any of the biofiltration swale sites. The remaining two biofiltration swales in Caltrans District 11 have not produced mosquitoes during their first year of operation.

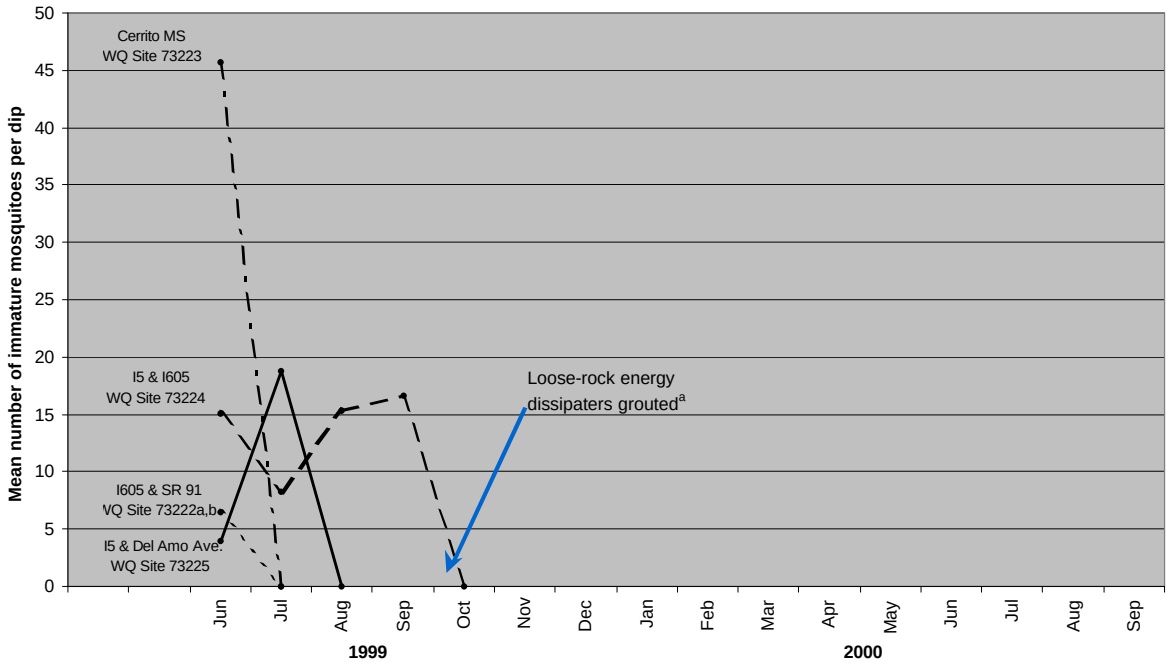
The biofiltration strips have created few problems with mosquito production. However, the sites at Altadena and Carlsbad Maintenance Station have incorporated a spreader trough to uniformly distribute the flow of stormwater over the entire vegetated surface. This source has produced mosquito larvae at the Altadena Maintenance Station site in Caltrans District 7 (Figures 21-22). Of 73 visits between June 1, 1999 and September 28, 2000, mosquito larvae were sampled on 10 (14%) occasions. Note: drained after every storm since Jan 2000.

Figure 19. Monthly collection of immature mosquitoes from Biofiltration Swales



[a]Energy dissipaters only engineered into Biofiltration Swales of Caltrans District 7.

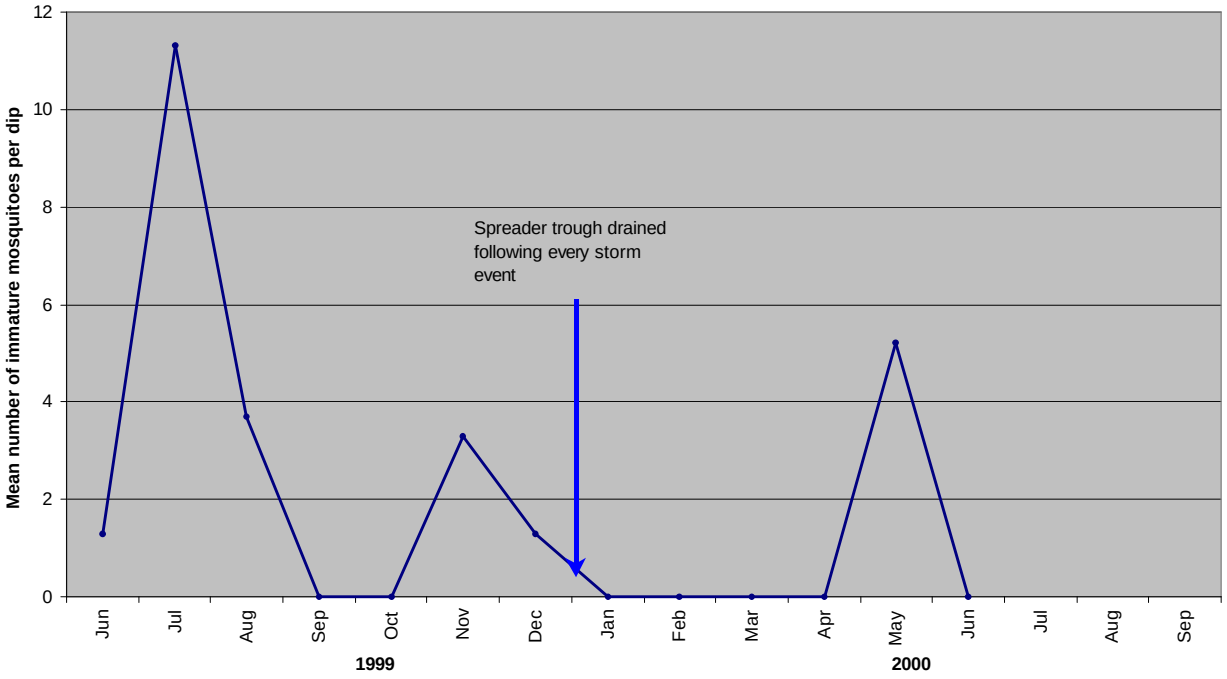
Figure 20. Monthly collection of immature mosquitoes from individual Biofiltration Swales in Caltrans District 7[1].



[a]Energy dissipaters only engineered into Biofiltration Swales of Caltrans District 7.

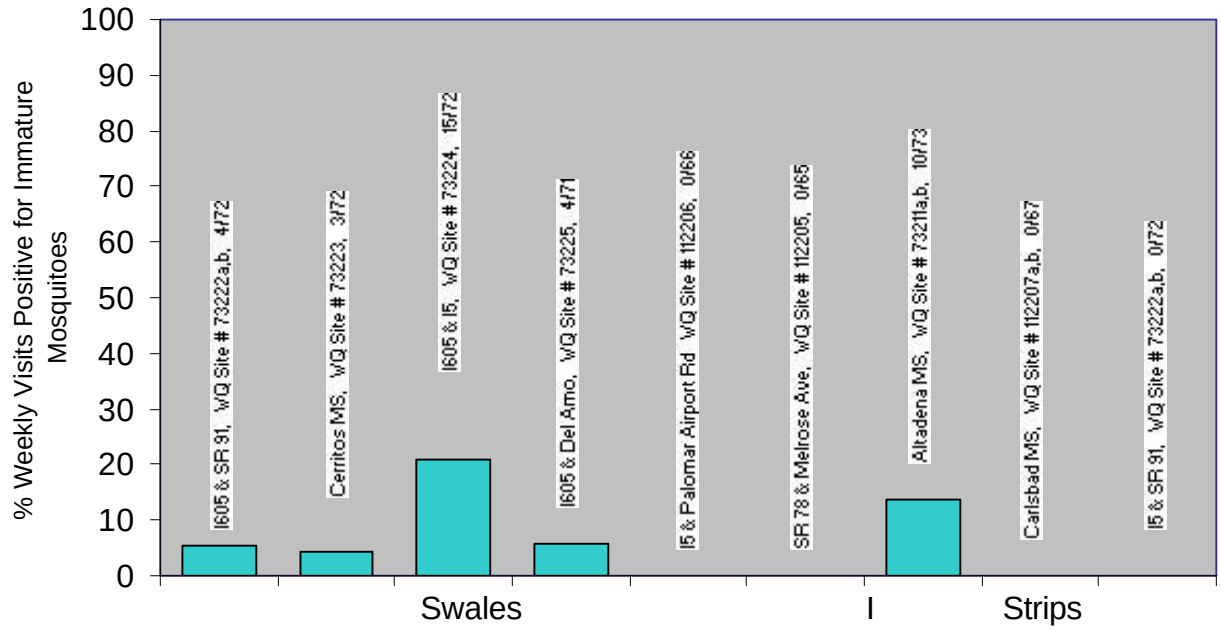
[1]To date, immature mosquitoes have not been detected in Biofiltration Swales constructed at I5 & Palomar Airport Rd. (WQ Site No. 112206) or SR 78 and Melrose Ave. (WQ Site No. 112205) in Caltrans District 11.

Figure 21. Monthly collection of immature mosquitoes from Altadena Maintenance Station Biofiltration Strip in Caltrans District 7 (WQ Site No. 73211a,b).



Footnote. To date, immature mosquitoes have not been detected in Biofiltration Strips constructed at the Carlsbad Maintenance Station (WQ Site No. 12207a,b) or at the I605 & SR 91 interchange (WQ Site No. 73222a,b) in Caltrans Districts 11 and 7, respectively.

Figure 22. Weekly monitoring of individual Biological Filtration Swales and Strips through Sept. 2000



Conclusion

Vector production at each BMP is influenced not only by the BMP design, but also by other factors, such as location, immediate and large-scale surroundings, artificial influx of water from irrigation and other practices, and site maintenance. Because of such factors, it is difficult to directly compare BMPs with similar designs, particularly over the short time frame of this preliminary study. However, specific issues that contribute to vector production in each technology type are usually common to different BMP categories and should be considered in future construction plans. It is critical that the public health impact of BMP design and construction be considered.

APPENDIX C: OPERATION AND MAINTENANCE LABOR HOURS/COST

APPENDIX D: EMPIRICAL OBSERVATION DATA OVERVIEW

EMPIRICAL OBSERVATIONS DATA

The BMP Pilot Program includes performing empirical observations at all BMP sites during the monitoring seasons. Empirical observations are based on the following general categories:

- General Information
- Meteorology
- Hydrology and Hydraulics
- Inlet Conditions
- Influent Water Quality
- Solids Deposition and Resuspension
- Treatment Medium Condition
- Outlet Condition
- Effluent Water Quality
- Vectors
- Structural Condition of the Facility
- Monitoring Equipment
- Changes During Storm Since Last Observation
- General Comments

The data collected is based on observations made during stormwater sampling. The Empirical Observations Field Form "H" included in the OMM Manual Volume II document is used to document field observations. Field data collected during the past two seasons are compiled and stored in the OMM database. Detailed information on data collected can be view on the website, www.rbf.com/caltrans. The information has been summarized by BMP type and the number of occurrences in each category has been tabulated. A more detailed analysis will be included in the Spring Quarterly Report.

Description	Question	Observation	
Effluent Water Quality Appearance	Color:	Brown	23
		Colorless	8
		Other	2
		White	1
		Yellow	7
	Floating materials:	None	33
		Organic material	3
		Surface film	5
		Trash or debris	1
	Odor (check all that apply):	Musty	5
		None	35
	Oil and grease:	None	36
		Sheen	3
	Turbidity	Cloudy, translucent	11
		Heavy cloudiness, opaque	3
		None	5
		Some cloudiness but transparent	23
Erosion	Basin bed:	(something noted)	7
	Basin bed:	(nothing noted)	81
	Basin side slopes:	(something noted)	22
	Basin side slopes:	(nothing noted)	78
	In inflow/influent channel:	(something noted)	11
	In inflow/influent channel:	(nothing noted)	83
	In outflow/effluent channel:	(something noted)	0
	In outflow/effluent channel:	(nothing noted)	88
	Near inlet:	(something noted)	12
	Near inlet:	(nothing noted)	77
	Near outlet:	(something noted)	2
	Near outlet:	(nothing noted)	88
Hydrologic and Hydraulic Characteristics	Flow Conditions: Check all that apply	Runoff entering facility	79
	Standing water conditions	Other water standing pool(s):	25
		Water standing in multiple pools	38
		Water standing in one isolated pool	10
		Water standing over entire basin	66
Influent Water Quality Appearance	Color:	Brown	25
		Colorless	7
		Gray	1
		Green	2
		White	1
		Yellow	9
	Floating materials:	None	19
		Oil and grease	8
		Organic material	13
		Surface film	10
		Trash or debris	9
	Odor (check all that apply):	None	38
	Oil and grease:	Sheen	11
	Turbidity:	Cloudy, translucent	13
		Heavy cloudiness, opaque	3
		None	4
		Some cloudiness but transparent	22
Inlet Conditions	Describe any erosion or resuspension of settled solids being caused by the flow in the influent channel		20
	Describe any obstructions or restrictions interfering with inflow/influent		15

Description	Question	Observation	
Meteorological Characteristics	Cloud cover: %	0	3
		10%	3
		100%	25
		15%	2
		20%	1
		25%	2
		30	1
		35%	1
		40%	1
		5%	3
		70%	5
		80%	5
		85 - 90%	1
		85%	3
		90%	3
		95%	2
		TO DARK TO TELL	1
	Distribution of rainfall	Localized cells	9
		Scattered showers	10
		Uniform	17
	Present rainfall:	Drizzle	7
		Light, Steady	7
		Mist	5
		Moderate	2
		None	38
		Sprinkle	6
	Time since end of previous storm event visit:	< 24 hours	51
		> 72 hours	43
		24-48 hours	10
		48-72 hours	9
	Wind speed:	0-5 mph (light)	55
		10-15 mph (brisk)	2
		5-10 mph (moderate)	8
Monitoring Equipment Condition	Flow meter calibration	Not applicable	1
		OK	63
		Recalibrated	1
	Flow meter desiccant OK or replaced	Not applicable	2
		OK	69
	Flow meter(s) functioning normally	No	3
		Not applicable	2
		Yes	67
	Flume(s) free of sediments and debris:	No	4
		Not applicable	7
		Yes	57
	Peristaltic pump tubing	Not applicable	8
		OK	63
	Power supply functioning	Not applicable	5
		Yes	70
	Sampler desiccant	Not applicable	2
		OK	68
	Sampler intake		70
	Sampler strainer		70
	Sampler suction line		71
	Samplers functioning normally	No	7
		Not applicable	2
		Yes	62
Monitoring Equipment Condition on Site	Equipment functional?	No	5
		Not applicable	1
		Yes	51

Description	Question	Observation	
Mosquitoes and Other Vectors	Record the presence and approximate number of another species (mammals, birds, reptiles; identify)	Not present	61
		Present (abundant)	1
		Present (few)	9
		Present (moderate)	2
		Present (one)	1
	Record the presence and approximate number of blackfly adults:	Not present	74
	Record the presence and approximate number of blackfly larvae:	Not present	74
	Record the presence and approximate number of cockroaches	Not present	74
	Record the presence and approximate number of mosquito adults:	Not present	74
		Present (few)	1
	Record the presence and approximate number of mosquito larvae.	Not present	72
		Present (few)	1
	Record the presence and approximate number of other insect (Identify)	Not present	67
		Present (abundant)	1
		Present (few)	4
		Present (one)	2
	Record the presence and approximate number of rats	Not present	74
		Present (few)	1
Outlet Conditions	Describe any obstructions or restrictions interfering with outflow/effluent		9
Solids Deposition and Resuspension	In inflow/influent channel:	(something noted)	57
	In inflow/influent channel:	(nothing noted)	59
	In multiple spots:	(something noted)	13
	In multiple spots:	(nothing noted)	80
	In one spot:	(something noted)	41
	In one spot:	(nothing noted)	66
	In outflow/effluent channel:	(something noted)	21
	In outflow/effluent channel:	(nothing noted)	80
	Over entire basin:	(something noted)	44
	Over entire basin:	(nothing noted)	65
	Solids resuspension evident (check all that apply):	In inflow/influent channel	5
		In outflow/effluent channel	3
		Near inlet	6
		Near outlet	3
		Other (describe)	3 No resuspention
Structural Condition of Facility	Record the presence of the following (check all that apply and give location in comments):	Inlet Structure Damage Outtlet Structure Damage Vandalism	4
Vectors	If yes, what type?	Other	12
		Rats	9
	Presence of vectors?	No	40
		Yes	22

Description	Question	Observation	
Vegetation	Basin bed vegetation cover:	All or nearly bare	30
		Complete	9
		Few large bare spots	9
		Few small bare spots	17
		Large areas bare	24
		Many large bare spots	13
		Many small bare spots	6
	Basin bed vegetation type:	All grasses	81
		Mostly grasses, some wetland plants	11
		Mostly wetland plants, some grasses	1
	Basin bed: Extent of woody shrubs or trees:	(something noted)	13
		(nothing noted)	72
	Basin side slopes vegetation cover:	All or nearly bare	20
		Complete	10
		Few large bare spots	9
		Few small bare spots	49
		Large areas bare	21
		Many large bare spots	16
		Many small bare spots	10
	Basin side slopes vegetation type:	All grasses	91
		Mostly grasses, some wetland plants	17
		Mostly wetland plants, some grasses	2
	Basin side slopes: Extent of woody shrubs or trees:	(something noted)	20
		(nothing noted)	64
Water Quality Appearance	Color: Check all that apply and describe under comments.	Black	1
		Blue	1
		Brown	43
		Colorless	13
		Gray	10
		Green	8
		Other	2
		Red	1
		White	1
		Yellow	2
	Floating Materials: Check all that apply and describe under comments	None	23
		Oil and grease	16
		Organic material	20
		Surface film	13
		Trash or debris	29
	Odor: Check all that apply and describe under comments:	Musty	2
		None	70
	Oil and Grease: Check all that apply and describe under comments.	None	45
		Sheen	19
	Turbidity: Check all that apply and describe under comments	Cloudy, translucent	20
		Heavy cloudiness, opaque	3
		None	11
		Some cloudiness but transparent	33

APPENDIX E: UPDATED ANALYTICAL DATA TABLES – PRELIMINARY

UPDATED ANALYTICAL DATA TABLES - PRELIMINARY

The latest analytical data tables are provided. The baseline sampling data information for the Carlsbad infiltration trench and La Costa wet basin has been updated. Sediment data for the La Costa infiltration basin has also been updated. All information that is provided in these tables is preliminary.

PRELIMINARY DATA
Submitted 6/28/00

BMP Retrofit Pilot Study, Stormwater Lab Data - District 7 (LawCrandall Sites)

Sample Date	Location	Site ID	BMP Type	Sampling Location	% Storm Capture	pH	Specific Conductance (umhos/cm)	Hardness (mg/L)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	TOC (mg/L)	Total (ug/L) As	Cd	Cr	Cu	Pb	Ni	Zn	Dissolved (ug/L) As	Cd	Cr	Cu	Pb	Ni	Zn	Nitrate-Nitrogen(1) (mg/L)	TKN(1) (mg/L)	Total P(1) (mg/L)	Diss P (mg/L)	Fecal Coliform (MPN/ 100mL)	TPH - Diesel (ug/L)	TPH - Gasoline (ug/L)	TPH - Oil (ug/L)
Storm Water Matrix																																		
January 25, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	58	6.8	45	13		38						17	12	140						9.8	0.93	95	---	---	---		---	310	560	290
January 25, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	93	7.1	48	20		38						17	17	160						10	1.2	87	---	---	---		---	250	<50U	350
January 25, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	50	6.8	150	40		50						29	4.9	120						22	<0.50U	83	---	---	---		---	760	<50U	630
January 25, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	16	7.3	68	27		90						11	6.6	220						4.8	0.5U	78	---	---	---		---	370	<50U	240
January 31, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	99	6.7	140	60		220						30	15	130						10	<0.50U	30J	---	---	---		---	420	<50U	360
January 31, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	99	6.8	115	36		58						12	4.9	140						7.2	<0.50U	85J	---	---	---		---	710	<50U	370
January 31, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	99	6.9	46	16		50						15	25	150						6.6	1.2	79J	---	---	---		---	340	<50U	210
January 31, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	89	7.2	47	15		42						15	16	180						6.8	1.5	110J	---	---	---		---	210	<50U	120
February 9, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	99	9.2	155	58		80						11	7	87						5.1	<0.50U	<5.0U	---	---	---		---	270	<50U	250
February 9, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	99	7.4	110	35		100						20	36	165						8.5	0.97	59J	---	---	---		---	410	89	200
February 9, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	35	7.6	64	51		320						59	110	820						4.2	0.72	41	---	---	---		---	140	<50U	110
March 25, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	81	6.9	41	11		4						8.3	2.6	96						6.9	0.50	87	0.67	1.49	0.06		---	290	54	240
March 25, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	79	7.1	130	33		34						20	16.0	160						12	0.68	86	0.74	1.68	0.10		---	390	240	430
March 25, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	32	6.7	110	38		60						18	4.8	49						12	<0.50U	21	0.45	1.05	0.13		---	340	<50U	230
March 25, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	83	6.9	53	20		80						12	7.0	93						4	<0.50U	26	0.38	0.86	0.10		---	270	<50U	260
March 25, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	99	6.9	76	29		82						32	50	280						18	2.2	120	0.96	2.67	0.20		---	590	460	480
March 25, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	80	7.4	74	27		44						18	20	160						11	2.7	89	0.81	1.22	0.09		---	420	240	670
April 6, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	34	7.1	98	23		36						25	10	275						14	0.61	180	0.98	2.45	0.10		---	460	62	200
April 6, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	97	7.1	30	17		78						23	43	225						5.3	0.72	54	0.43	1.27	0.15		---	190	66	180
April 6, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	74	6.7	105	38		72						19	5.9	62						13	<0.50U	33	1.1	1.52	0.21		---	380	<50U	350
April 6, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	83	7.1	54	23		68						22	37	265						9.8	0.97	130	0.52	1.53	0.14		---	250	77	260
April 6, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	68	7.5	130	59		130						59	110J	460						12	4.7	120	0.71	2.62	0.24		---	330	<50U	300
April 12, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	61	7.0	25	<7.0U		6						5.4	4.6	73						3.2	<0.50	54	0.34	2.4	0.181		---	160	<50U	98
April 12, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	99	7.3	34	13		16						7.5	9.5	82						4	<0.50	45	0.39	1.01	0.077		---	240	<50U	260
April 12, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	84	6.8	96	37		24						17	7.8	71						7.7	<0.50U	18	0.94	1.49	0.28		---	260	<50U	160
April 11, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	96	7.0	38	13		37						8.6	3.6	66						4.7	<0.50U	34	0.27	0.71	0.079		---	270	<50U	240
April 12, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	99	7.5	57	18		26						13	12	145						9.1	0.98	100	0.62	1.45	0.105		---	230	<50U	190
April 12, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	94	7.4	58	21		14						14	16	195						8.9	3.9	135	0.58	0.99	0.122		---	160	<50U	110
January 25, 2000	Altadena Maintenance Station	073211a	Biofiltration Strip	Influent	86	6.7	10	15		50						1.3	2.0	13.1						<1U	<1U	5.1	0.27	1.8	<0.002U		80	<250U	<50U	310
January 25, 2000	Altadena Maintenance Station	073211a	Biofiltration Strip	Effluent	95	6.7	20	20		17						<1U	<1U	4.2						<1U	<1U	3.2	0.41	2.2	0.51		140	<250U	<50U	<200U
January 25, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	88	6.5	12	18		24						1.5	<1U	14.8						1.1	<1U	13.8	1.2	0.9	<0.002U		---	<250U	<50U	<200U
January 25, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	100	7.2	9	10		13						1.7	<1U	13.5						1.4	<1U	10.5	0.41	1.8	<0.002U		---	<250U	<50U	<200U
January 25, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	100	7.3	11	18		44						3.0	2.4	27.6						1.8	<1U	18.7	0.68	18.2	<0.002U		---	<250U	<50U	<200U
January 25, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	94	7.1	17	26		39						2.4	2.3	34.2						1.9	<1U	26.7	1.02	1.4	<0.002U		---	<250U	<50U	<200U
January 25, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	97	6.8	18	20		13						1.7	<1U	10.8						1.2	<1U	9.1	1.37	2.5	<0.002U		---	<250U	<50U	<200U
January 30, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	95	7.1	91	36		19						1.8	<1U	19.8						1.5	<1U	18.0	1.52	2.1	0.075		---	<250U	<50U	<200U
January 31, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	92	6.3	115	35		18						3.7	<1U	24.6						3.3	<1U	23.7	1.99	4.7	0.196		---	<250U	<50U	<200U
January 31, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	89	6.8	40	18		6						1.3	<1U	18.2						1.3	<1U	12.3	0.67	3.7	0.096		---	<250U	<50U	<200U
January 31, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	98	6.5	50	22		8						1.5	<1U	13.4						1.3	<1U	11.7	0.70	2.4	0.128		---	<250U	<50U	<200U
January 31, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	100	7.5	270	70		11						1.6	<1U	11.4						1.4	<1U	9.7	6.3	1.8	0.138		---	<250U	<50U	<200U
February 10, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	77	7.2	99	27		128						22.2	16.4	107						21.1	13.9	98	1.13	3.25	0.07		---	<250U	<50U	<200U
February 10, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	96	7.9	199	54		92						33.4	12.3	453						15.2	8.3	247	0.44	3.38	0.07		---	<250U	<50U	<200U
February 16, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	100	6.9	19	12		13						4.4	1.7	50						4.3J	1.5	48J	0.40	1.59	<0.002U		---	<250U	<50U	<200U
February 16, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	100	7.2	32	12		32						7.7	9.4	69						7.3J	8.2	67J	0.41	1.73	<0.002U		---	<250U	<50U	<200U
February 16, 2000	Altadena Maintenance Station	073211a	Biofiltration Strip	Influent	78	7.0	21	15		117						11.4	18.9	124						9.4J	14.1	116J	0.23	1.45	0.032		---	---	---	---
February 16, 2000	Altadena Maintenance Station	073211a	Biofiltration Strip	Effluent	91	7.4	47	21		24						3.1	2.9	16.9						2.7J	2.7	15.8J	0.35	1.22	0.31		---	---	---	---
February 21, 2000	Altadena Maintenance Station	073211a	Biofiltration Strip	Influent	79	7.5	22	15		79						1.1	1.3	13						<1U	<1U	9.1	0.22	1.43	0.05		---	---	---	---
February 21, 2000	Altadena Maintenance Station	073211a	Biofiltration Strip	Effluent	90	7.6	24	16		15						<1U	<1U	9.1						<1U	<1U	5.6	0.12	0.9	0.18		---	---	---	---
February 21, 2000	Cerritos Maintenance Station	073223	Biofiltration Swale	Influent	87	7.5	4	41		71						5.1	8.9	34.3						4.1	7.1	30.1	0.45	1.60	0.07		24000	<250U	<50U	<200U
February 21, 2000	Cerritos Maintenance Station	073223	Biofiltration Swale	Effluent	92	7.4	127	50		62						3.3	5.7	17.2						4.1	4.9	17.6	0.31	1.56	0.18		>160000	<250U	<50U	<200U
February 22, 2000	I-5/I-605	073224	Biofiltration Swale	Influent	98	7.2	65	21		94						4.6	8.3	50.9						3.1	6.4	25.6	0.27	1.28	0.07		140	<250U	<50U	<200U
February 21, 2000	I-5/I-605	073224	Biofiltration Swale	Effluent	87	7.5	50	23		10						1.5	2.0	6.2						1.3	1.7	6.2	0.68	1.05	0.17		50	<250U	<50U	<200U
February 21, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	95	7.3	19	13		22						1.2	2.0	9.4						1.2	2.0	9.4	0.18	1.09	0.07		---	<250U	<50U	<200U
February 21, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	81	7.5	23	23		20						1.2	<1U	13						1.0	<1U	13	0.03	1.08	0.06		---	<250U	<50U	<200U
February 21, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	98	7.3	36	22		38						1.3	1.3	14.0						1.3	1.1	8.4	0.35	1.08	0.06		---	<250U	<50U	<200U
February 21, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	89	7.8	181	62		167						11.1	1.7	18.7						10.3	1.3	16.6	1.63	0.81	0.08		---	<250U	<50U	<200U
February 21, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	95	7.7	393	136		28						4.8	1.9	13.0						4.7	1.5	12.5	0.44	1.06	0.10		---	<250U	<50U	<200U
February 21, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	81	7.4	41	17		8						2.8	1.2	19.5						2.6	<1U	18.2	0.60	1.78	0.10		---	<250U	<50U	<200U
February 20, 2000	I-605 @ Carson	073225	Biofiltration Swale	Influent	---	---	---	---		---						---	---	---						---	---	---	---	---	---		5000	<250U	<50U	<200U
February 20, 2000	I-605 @ Carson	073225	Biofiltration Swale	Effluent	---	---	---	---		---						---	---	---						---	---	---	---	---	---		500	<250U	<50U	<200U
February 20, 2000	I-605/SR-91	073222a	Biofiltration Strip	Influent	---	---	---	---		---						---	---	---						---	---	---	---	---	---		500	<250U	<50U	<200U
February 20, 2000	I-605/SR-91	073222a	Biofiltration Strip	Effluent	---	---	---	---		---						---	---	---						---	---	---	---	---	---		170	<250U	<50U	<200U
February 20, 2000	I-605/SR-91	073222b	Biofiltration Swale	Influent	---	---	---	---		---						---	---	---						---	---	---	---	---	---		240	<250U	<50U	<200U
February 20, 2000	I-605/SR-91	073222b	Biofiltration Swale	Effluent	---	---	---	---		---						---	---	---						---	---	---	---	---	---		500	<250U	<50U	<200U

PRELIMINARY DATA
Submitted 6/28/00

BMP Retrofit Pilot Study, Stormwater Lab Data - District 7 (LawCrandall Sites)

Sample Date	Location	Site ID	BMP Type	Sampling Location	% Storm Capture	pH	Specific Conductance (umhos/cm)	Hardness (mg/L)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	TOC (mg/L)	Total (ug/L) As	Cd	Cr	Cu	Pb	Ni	Zn	Dissolved (ug/L) As	Cd	Cr	Cu	Pb	Ni	Zn	Nitrate-Nitrogen(1) (mg/L)	TKN(1) (mg/L)	Total P(1) (mg/L)	Diss P (mg/L)	Fecal Coliform (MPN/100mL)	TPH - Diesel (ug/L)	TPH - Gasoline (ug/L)	TPH - Oil (ug/L)
Storm Water Matrix																																		
February 27, 2000	Altadena Maintenance Station	073211a	Biofiltration Strip	Influent	100	6.5	32	11		45						13.7	18.5	102						4.6	1.3	28	0.73	2.64J	0.08		800	<250U	<50U	222
February 27, 2000	Altadena Maintenance Station	073211a	Biofiltration Strip	Effluent	100	6.6	28	10		16						3.0	3.4	20.2						1.7	1.0	12	0.56	1.69J	0.21		300	<250U	<50U	<200U
February 27, 2000	I-5/I-605	073224	Biofiltration Swale	Influent	100	6.5	75	23		21						18.8	21.7	90						12.2	5.7	61	0.63	2.32J	0.06		30	<250U	<50U	319
February 27, 2000	I-5/I-605	073224	Biofiltration Swale	Effluent	100	6.8	78	24		14						10.4	9.6	28.1						9.3	5.1	23.3	0.68	1.95J	0.27		220	<250U	<50U	292
February 27, 2000	Cerritos Maintenance Station	073223	Biofiltration Swale	Influent	95	7.2	29	80		29						24.3	15.4	96						17.8	4.8	58	0.73	2.64J	0.12		5000	<250U	<50U	457
February 27, 2000	Cerritos Maintenance Station	073223	Biofiltration Swale	Effluent	99	7.3	98	79		62						20.5	15.0	61						15.6	3.8	35	0.77	3.13J	0.27		1600	<250U	<50U	320
February 28, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	100	6.9	36	11		20						5.8	4.7	60						4.1	<1U	42	0.53	2.08J	0.07		---	<250U	<50U	<200U
February 28, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	99	7.0	36	11		5						4.2	<1U	50						4.3	<1U	49	0.40	2.15J	0.05		---	<250U	<50U	<200U
February 27, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	90	6.5	49	14		13						6.1	2.3	31						5.1	<1U	20.8	0.31	3.23J	0.08		---	<250U	<50U	<200U
February 27, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	100	6.5	50	14		24						12.8	2.5	32						4.6	<1U	17.3	0.33	1.71J	0.10		---	<250U	<50U	<200U
February 27, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	87	6.5	33	9		27						11.6	12.2	106						5.5	1.3	58	0.58	1.95J	0.06		---	<250U	<50U	<200U
February 27, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	100	6.8	49	17		13						10.4	6.5	218						7.1	2.9	115	0.70	1.86J	0.13		---	<250U	<50U	<200U
March 8, 2000	I-605 @ Carson	073225	Biofiltration Swale	Influent	98	7.6	85	39		67						27.8	175	110						9.4	18.1	24.4	0.45	3.23	0.13		11000	<250U	<50U	890
March 8, 2000	I-605 @ Carson	073225	Biofiltration Swale	Effluent	85	7.6	111	49		5						9.4	38	29.3						8.5	24	23.7	0.69	2.60	0.35		8000	<250U	<50U	355
March 8, 2000	I-605/SR-91	073222a	Biofiltration Strip	Influent	93	7.5	71	48		54						24.8	81	96						11.2	20.7	45	0.41	1.78	0.12		800	<250U	<50U	311
March 8, 2000	I-605/SR-91	073222a	Biofiltration Strip	Effluent	87	7.6	161	64		<1						8.1	4.6	19.5						6.4	2.6	12.8	0.30	1.03	2.73		140	<250U	<50U	<200U
March 8, 2000	I-605/SR-91	073222b	Biofiltration Swale	Influent	100	7.5	80	41		38						19.4	40.1	121						10.8	15.9	72.9	0.29	1.85	0.28		5000	<250U	<50U	488
March 8, 2000	I-605/SR-91	073222b	Biofiltration Swale	Effluent	93	7.9	279	54		26						13.8	9.9	31.2						11.5	4.9	20.5	0.39	2.65	2.68		900	<250U	<50U	355
March 8, 2000	Altadena Maintenance Station	073211a	Biofiltration Strip	Influent	100	7.1	41	20		52						7.2	12.0	57						2.6	1.2	29	0.34	1.63	0.04		---	---	---	---
March 8, 2000	Altadena Maintenance Station	073211a	Biofiltration Strip	Effluent	96	7.4	33	15		28						2.5	2.0	14.8						2.1	<1U	13.0	0.02	1.66	0.18		---	---	---	---
March 8, 2000	I-5/I-605	073224	Biofiltration Swale	Influent	99	7.4	82	26		54						25.2	74.2	371						13.4	26.2	69	0.51	1.81	0.09		---	---	---	---
March 8, 2000	I-5/I-605	073224	Biofiltration Swale	Effluent	100	7.4	68	26		18						14.1	33.1	48.5						9.5	18.1	33.2	0.47	1.85	0.20		---	---	---	---
March 8, 2000	Cerritos Maintenance Station	073223	Biofiltration Swale	Influent	100	7.6	86	32		103						35.6	100	275						11.1	19.0	52.3	0.39	1.79	0.11		---	---	---	---
March 8, 2000	Cerritos Maintenance Station	073223	Biofiltration Swale	Effluent	100	7.6	101	41		56						19.5	49.8	84.6						11.7	20.3	48.6	0.47	4.76	0.15		---	---	---	---
March 8, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	100	7.6	24	25		31						6.7	12.0	74						3.1	2.6	41	0.23	1.48	0.07		---	<250U	<50U	210
March 8, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	99	6.8	34	21		10						4.3	2.0	66						3.6	<1U	59	0.37	2.60	0.04		---	<250U	<50U	<200U
April 18, 2000	Altadena Maintenance Station	073211	Biofiltration Strip	Influent	99	6.7	19	8		57						9.5	9.7	74						4.8	1.3	43.1	0.20	0.11	0.08		---	---	---	---
April 18, 2000	Altadena Maintenance Station	073211	Biofiltration Strip	Effluent	99	6.9	28	10		11						5.4	3.5	37.3						4.8	1.2	29.2	0.23	0.11	0.22		---	---	---	---
April 18, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	100	6.8	26	8		27						8.1	10	82.8						4.7	1.6	57.1	0.34	1.6	0.08		---	<250U	<50U	<200U
April 18, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	99	6.8	17	4		13						5.8	2.8	63.5						4.9	<1U	54.5	0.22	1.38	0.05		---	<250U	<50U	<200U
April 18, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	96	6.6	151	53		30						17.4	3.5	107						14.2	1.3	103	0.66	2.29	0.08		---	<250U	<50U	1116
April 18, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	100	6.4	63	21		36						9.7	3.7	34.5						7.1	1	27.9	0.60	1.56	0.15		---	<250U	<50U	<200U
April 18, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	99	7.3	53	20		38						29.7	16.8	436						21.5	5	356	0.86	1.9	0.1		---	<250U	<50U	<200U
April 18, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	82	6.9	79	27		45						19.3	12.5	328						16.5	3.7	319	2.22	2.1	0.14		---	<250U	<50U	<200U
April 18, 2000	I-605/SR-91	073222a	Biofiltration Strip	Influent	96	7.5	81	29		61						36.9	79	226						20.4	14.8	79	0.62	2.49	0.21		300	<250U	<50U	2083
April 18, 2000	I-605/SR-91	073222a	Biofiltration Strip	Effluent	90	6.9	179	40		19						17	8.7	61.7						14.7	2.4	50.7	1.15	4.23	0.79		9000	<250U	<50U	1222
April 18, 2000	I-605/SR-91	073222b	Biofiltration Swale	Influent	96	7.5	85	30		45						30.7	40.2	322						19	12.2	141	0.82	0.13	0.2		---	---	---	---
April 18, 2000	I-605/SR-91	073222b	Biofiltration Swale	Effluent	89	7.4	193	30		37						20.3	15.5	68.9						16	4.8	45.4	0.83	0.13	1.03		---	---	---	---
April 18, 2000	Cerritos Maintenance Station	073223	Biofiltration Swale	Influent	92	7.5	104	41		117						58.4	133	478						22.4	20	105	0.62	0.11	0.17		---	---	---	---
April 18, 2000	Cerritos Maintenance Station	073223	Biofiltration Swale	Effluent	100	7.7	84	30		50						27.4	47.6	104						17.4	15.5	50.3	0.58	0.08	0.34		---	---	---	---
April 18, 2000	I-5/I-605	073224	Biofiltration Swale	Influent	98	7.4	75	25		27						26.6	48.4	243						17.1	13.9	109	0.48	0.12	0.11		---	---	---	---
April 18, 2000	I-5/I-605	073224	Biofiltration Swale	Effluent	100	7.1	59	19		19						19.6	31.3	80.9						15	10.3	55.6	0.47	0.13	0.29		---	---	---	---
April 18, 2000	I-605 @ Carson	073225	Biofiltration Swale	Influent	95	7.4	88	35		67						31.2	173	152						18.9	46.1	69.5	0.67	2.41	0.15		8000	<250U	<50U	6663
April 18, 2000	I-605 @ Carson	073225	Biofiltration Swale	Effluent	97	7.0	120	39		31						23	74.6	75.1						17.2	16.8	42.7	0.91	2.76	0.53		2400	<250U	<50U	7838

(1) Analysis requested for samples from drain inlet inserts beginning on 3/25/99 by Caltrans but not required as part of OMM Plan. These analyses are required as per the revised OMM Plan (September 1999)

NR - Not Reported. Analysis was performed to comply with holding time requirements. However, paired samples were not successfully collected.

"—" - Not Analyzed

PRELIMINARY DATA

Submitted 6/28/00

BMP Retrofit Pilot Study, Solid Matrix Lab Data - District 7 (Law Crandall Sites)

					Total (mg/kg)					Grain Size Distribution (% Passing)									
Sample Date	**Location**	**Site ID**	**BMP Type**	**Sampling Location**	**Cu**	**Pb**	**Zn**	**TRPH (mg/kg)**	**Mass (grams)**	**No. 4**	**No. 8**	**No. 10**	**No. 16**	**No. 20**	**No. 30**	**No. 40**	**No. 50**	**No. 100**	**No. 200**
Solids Matrix (Filter/Adsorbent Material/Sediment)					—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
February 2, 1999		—	Drain Inlet Insert - StreamGuard	Unused - StreamGuard Fabric	0.22	<0.10	3.8	684	943.9	—	—	—	—	—	—	—	—	—	—
February 2, 1999		—	Drain Inlet Insert - StreamGuard	Unused - StreamGuard Absorbent	0.24	<0.10	0.6	1970	443.15	—	—	—	—	—	—	—	—	—	—
February 2, 1999		—	Drain Inlet Insert - Fossil Filter	Unused - Fossil Filter Adsorbent	0.2	1.2	1.2	26.6	380.84	—	—	—	—	—	—	—	—	—	—
January 29, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	17.7	46.4	509	1130	1331	—	—	—	—	—	—	—	—	—	—
January 29, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	2.0	2.3	20.1	2620	465.1	—	—	—	—	—	—	—	—	—	—
January 29, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Sediment	31.9	41.8	377	58000	100	—	—	—	—	—	—	—	—	—	—
January 29, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	10.5	15.9	135	1910	3065	—	—	—	—	—	—	—	—	—	—
January 29, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	22.4	51.5	384	1610	120	—	—	—	—	—	—	—	—	—	—
March 4, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	64.8	134	704	632	1827	—	—	—	—	—	—	—	—	—	—
March 4, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	55.4	106	609	87.7	4767	—	—	—	—	—	—	—	—	—	—
March 24, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Used - StreamGuard Sediment	18.1	10.1	87	3010	3232	—	—	—	—	—	—	—	—	—	—
March 24, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	11.7	4.5	44.4	340000	1023	—	—	—	—	—	—	—	—	—	—
March 24, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	17.3	11.4	132	4350	1765	—	—	—	—	—	—	—	—	—	—
April 8, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	24.7	61.6	522	3670	1122	—	—	—	—	—	—	—	—	—	—
April 8, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	1.7	2.7	13.6	17900	493	—	—	—	—	—	—	—	—	—	—
April 8, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Sediment	36.6	60.2	422	12500	177	—	—	—	—	—	—	—	—	—	—
April 8, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	5.5	11.9	43.5	11100	3964	—	—	—	—	—	—	—	—	—	—
April 8, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	38.4	110	321	12200	472	—	—	—	—	—	—	—	—	—	—
April 12, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	9.9	23.5	162	2570	1420	—	—	—	—	—	—	—	—	—	—
April 12, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	0.3	0.25	2.8	2590	459	—	—	—	—	—	—	—	—	—	—
April 12, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	8.6	17.3	89.5	3300	3680	—	—	—	—	—	—	—	—	—	—
April 12, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	20.9	36.3	177	16800	191	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	74.5	150	917	3020	960	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	16.9	29.5	105	33700J	504.5	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Sediment	29.9	52.9	301	2870	4536	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	35.3	119	338	5180	58977	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	57	104	356	4550	2268	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	34.3	38.3	210	2180	890	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	10.9	8.2	46.7	28100J	617	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Used - StreamGuard Sediment	24.5	9.9	98.7	8860	6804	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	18.9	21.7	120	3270	7711	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	22.2	7	69	333U	6350	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	42.5	95.4	934	2300	1056	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	15.5	25.9	121	26400J	437	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Used - StreamGuard Sediment	51	127	574	2320	1515	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	61.5	135	705	1460	5443	—	—	—	—	—	—	—	—	—	—
June 1, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	43.7	70.2	856	2950	14061	—	—	—	—	—	—	—	—	—	—
Solids Matrix (Soil)										—	—	—	—	—	—	—	—	—	—
June 8, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	22.4	38.9	240	4730	794	—	—	—	—	—	—	—	—	—	—
June 8, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	4.1	7.0	33.6	2590	452	—	—	—	—	—	—	—	—	—	—
June 8, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Sediment	24.6	40.1	420	5080	1648	—	—	—	—	—	—	—	—	—	—
June 8, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	18.0	33.7	180.0	3190	1878	—	—	—	—	—	—	—	—	—	—
June 8, 1999	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	40.5	88.5	384	15500	493	—	—	—	—	—	—	—	—	—	—
June 8, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	53.7	143	634	4360	1426	—	—	—	—	—	—	—	—	—	—
June 8, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	5.9	18.6	45.1	12100	477	—	—	—	—	—	—	—	—	—	—
June 8, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Used - StreamGuard Sediment	145	121	624	10500	320	—	—	—	—	—	—	—	—	—	—
June 8, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	46.9	121	341.0	2470	8119	—	—	—	—	—	—	—	—	—	—
June 8, 1999	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	76.3	204	655	4550	31752	—	—	—	—	—	—	—	—	—	—
June 11, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	32.2	32.0	258	12100	1468	—	—	—	—	—	—	—	—	—	—
June 11, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	5.7	6.0	58.5	15800	514	—	—	—	—	—	—	—	—	—	—
June 11, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Used - StreamGuard Sediment	15.6	14.3	173	5770	3402	—	—	—	—	—	—	—	—	—	—
June 11, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	12.1	14.5	76.0	7460	6350.4	—	—	—	—	—	—	—	—	—	—
June 11, 1999	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	42.8	25.3	268	6720	10392	—	—	—	—	—	—	—	—	—	—
Solids Matrix (Soil)																			
January 28, 1999	I-605/91 Interchange	073101	Infiltration Basin	I-605/91 Baseline Soil; 0.3-0.5 meter depth	19.5	5.1	45.9	<10.0	—	100	100	—	99	—	98	—	92	73	50
January 28, 1999	I-605/91 Interchange	073101	Infiltration Basin	I-605/91 Baseline Soil; 0.6-0.8 meter depth	15.5	3.8	39.9	<10.0	—	100	99	—	98	—	96	—	84	56	31
June 20, 2000	I-605/91 Interchange	073101	Infiltration Basin	I-605/91 Baseline Soil; 0.0-0.2 meter depth	22.8	39.4	54.4	10U	986.5	100	—	99.4	—	98.3	—	95.1	—	74.1	53.3
June 20, 2000	I-605/91 Interchange	073101	Infiltration Basin	I-605/91 Baseline Soil; 0.3-0.5 meter depth	16.1	3.4	35.8	10U	1082	100	—	100	—	99.4	—	94.7	—	58	28.7
June 20, 2000	I-605/91 Interchange	073101	Infiltration Basin	I-605/91 Baseline Soil; 0.6-0.8 meter depth	16.1	3.5	36.6	10U	940	100	—	100	—	99.8	—	94.5	—	54.5	25

NR - Not Reported. Analysis was performed to comply with holding time requirements. However, paired samples were not successfully collected.

"—" - Not Analyzed

Per Caltrans request, samples taken on March 4 & 24 1999 were not immediately analyzed. They were, however, analyzed on a later date (October 26 1999).

PRELIMINARY DATA

Submitted 6/16/00

BMP Retrofit Pilot Study, Stormwater Lab Data - District 7 (Brown and Caldwell Sites)

Sample Date	BMP Location	Site ID	BMP Type	Sampling Location	% Storm Capture	pH	Specific Conductance (µmhos/cm)	Hardness (mg/L)	TSS (mg/L)	Total Metals (ug/L) Cu	Pb	Zn	Dissolved Metals (ug/L) Cu	Pb	Zn	Nitrate Nitrogen (mg/L)	TKN (mg/L)	Total P (mg/L)	Fecal Coliform (MPN/100mL)	TPH Diesel (µg/L)	TPH Gasoline (µg/L)	TPH Oil (µg/L)	Oil & Grease (mg/L)
Storm Water Matrix																							
March 25, 1999	I-5/I-605 Intersection	074101	EDB [1]	Influent	100	NR	NR	—	—	—	—	—	—	—	—	NR	—	—	1600	—	—	—	—
March 25, 1999	I-5/I-605 Intersection	074101	EDB [1]	Effluent	0	—	—	—	—	—	—	—	—	—	—	—	—	—	900 J	—	—	—	—
March 25, 1999	I-605/SR-91 Intersection	074102	EDB [2]	Influent	100	7.7	110	76 J	85	56.0	190.0	390.0	15.0	6.2	130.0	1.00	1.8	0.330	900	2900 J	50 U	1300 J	—
March 25, 1999	I-605/SR-91 Intersection	074102	EDB [2]	Effluent	100	7.5	190	62 J	59	37.0	120.0	260.0	14.0	2.0	130.0	2.10	3.4	0.780	500	2900 J	50 U	1100 J	—
March 25, 1999	Foothill MS	074203	Media Filter	Influent	100	NR	NR	—	—	—	—	—	—	—	—	NR	—	—	>1600[3]	—	—	—	—
March 25, 1999	Foothill MS	074203	Media Filter	Effluent	0	—	—	—	—	—	—	—	—	—	—	—	—	—	2[3]	UJ —	—	—	—
April 6, 1999	I-5/I-605 Intersection	074101	EDB [1]	Influent	99.6	7.2	160	48	71	34.0	88.0	200.0	17.0	5.5	72.0	0.84	2.0	0.410	1600	2200	50 U	1300	—
April 6, 1999	I-5/I-605 Intersection	074101	EDB [1]	Effluent	99.3	7.3	190	44	44	30.0	63.0	140.0	19.0	2.5	68.0	0.81	2.0	0.450	300	3000	50 U	1300	—
April 6, 1999	I-605/SR-91 Intersection	074102	EDB [2]	Influent	100	7.4	120	38	80	50.0	250.0	310.0	13.0	11.0	73.0	0.88	2.4	0.170	>1600	3900	50 U	2000	—
April 6, 1999	I-605/SR-91 Intersection	074102	EDB [2]	Effluent	100	7.3	200	62	49	30.0	140.0	220.0	12.0	3.5	88.0	2.00	2.9	0.860	>1600	5200	50 U	3800	—
April 6, 1999	Eastern Regional MS	074202	Media Filter	Influent	95.1	6.9	85	24	57	19.0	37.0	130.0	10.0	2.1	37.0	0.68	0.9	0.150	900 J	1200	50 U	640	—
April 6, 1999	Eastern Regional MS	074202	Media Filter	Effluent	79.4	7.1	82	24	20	11.0	11.0	36.0	7.8	1.4	12.0 U	0.77	1.0	0.088 J	110 J	1100	50 U	450	—
April 6, 1999	Foothill MS	074203	Media Filter	Influent	98.8	6.6	49	22	120	42.0	45.0	340.0	19.0	1.3	110.0	0.37	1.4	0.320	500	1000	50 U	320	—
April 6, 1999	Foothill MS	074203	Media Filter	Effluent	90.5	7.0	80	26	21	18.0	6.4	45.0	14.0	1.0 U	21.0	0.43	0.6	0.090 U	2 U	500	50 U	200 U	—
April 11, 1999	I-5/I-605 Intersection	074101	EDB [1]	Influent	87	7.2	79	24	48	21.0	60.0	140.0	8.7	3.6	40.0	0.52	1.5	0.210	500 J	2000	50 U	1200	—
April 11, 1999	I-5/I-605 Intersection	074101	EDB [1]	Effluent	74.7	7.4	86	24	12	11.0	17.0	41.0	8.1	1.5	53.0	0.56	1.0	0.030 U	2 J	1200	50 U	510	—
April 11, 1999	I-605/SR-91 Intersection	074102	EDB [2]	Influent	69.8	7.5	63	21	61	30.0	99.0	240.0	7.4	3.8	56.0	0.44	1.8	0.029	110 J	3600	50 U	2100	—
April 11, 1999	I-605/SR-91 Intersection	074102	EDB [2]	Effluent	96.8	7.5	95	28	94	19.0	47.0	99.0	6.7	2.0	43.0	0.74	1.6	0.340	500 J	3900	50 U	2200	—
April 11, 1999	Eastern Regional MS	074202	Media Filter	Influent	—	—	—	—	—	—	—	—	—	—	—	—	—	—	900 J	1300	50 U	670	—
April 11, 1999	Eastern Regional MS	074202	Media Filter	Effluent	—	—	—	—	—	—	—	—	—	—	—	—	—	—	90 J	630	50 U	210	—
April 11, 1999	Foothill MS	074203	Media Filter	Influent	100	7.1	59	16	68	28.0	21.0	220.0	24.0	2.9	120.0	0.37	1.2	0.180	>1600	940	50 U	560	—
April 11, 1999	Foothill MS	074203	Media Filter	Effluent	99.4	7.2	88	30	11	17.0	3.7	33.0	15.0	1.0 U	21.0	0.35	0.7	0.080 U	>1600	570	50 U	200 U	—
February 20, 2000	I-5/I-605 Intersection	074101	EDB [1]	Influent	94	7.3	77	40	110	15.1	31.7	104	4.32	2.80	44.4	0.59	1.4	0.42	28,000	1,300	50 U	690	—
February 20, 2000	I-5/I-605 Intersection	074101	EDB [1]	Effluent	99	7.5	81	29	32	17.6	49.0	79.8	4.85	2.13	36.1	0.64	1.1	0.31	3,000	800	50 U	340	—
February 20, 2000	I-605/SR-91 Intersection	074102	EDB [2]	Influent	—	—	—	—	—	—	—	—	—	—	—	—	—	—	500	2,100	50 U	1,000	—
February 20, 2000	I-605/SR-91 Intersection	074102	EDB [2]	Effluent	—	—	—	—	—	—	—	—	—	—	—	—	—	—	500	1,100	50 U	470	—
February 20, 2000	Alameda MS	074201	Oil/Water Sep.	Influent	—	7.4	88	32	68	—	—	—	—	—	—	—	—	—	—	770	50 U	250	5 U
February 20, 2000	Alameda MS	074201	Oil/Water Sep.	Effluent	—	6.8	57	20	13	—	—	—	—	—	—	—	—	—	—	590	50 U	260	5 U
February 20, 2000	Eastern Regional MS	074202	Media Filter	Influent	100	7.3 J	37	10	23	9.18	11.6 J	47.8	5.00	1.17	33.7	0.36	0.87	0.085	900	530	50 U	210	—
February 20, 2000	Eastern Regional MS	074202	Media Filter	Effluent	100	7.2 J	42	15	5.0	8.42	18.9 J	13.3	3.74	1.00 U	15.1 U	0.45	0.42 J	0.032	500	340	50 U	200 U	—
February 20, 2000	Foothill MS	074203	Media Filter	Influent	75	7.0 J	55	20	75	19.6	28.2 J	252	5.36	2.47	151	0.20	2.1	0.47	70,000	930	50 U	380	—
February 20, 2000	Foothill MS	074203	Media Filter	Effluent	99	7.2	51	14	5.0	8.47	9.65 J	21.1	4.15	1.00 U	22.6	0.44	1.0	0.180	500	260	50 U	200 U	—
February 20, 2000	Termination P&R	074204	Media Filter	Influent	90	7.4	49	16	44	15.0	12.1 J	83.0	3.94	1 U	27.2	0.20	0.78	0.16	900	1,000	50 U	370	—
February 20, 2000	Termination P&R	074204	Media Filter	Effluent	100	7.3	69	18	4.0	6.18	4.43 J	13.5	3.56	1.00 U	17.1	0.63	0.48 J	0.077	110	290	50 U	200 U	—
February 20, 2000	Via Verde P&R	074206	MCTT	Influent	100	6.9 J	15	4.8	41	4.89	6.50 J	52.9	1.02	1.00 U	23.4	0.10 U	0.90	0.16	6,000	910	50 U	410	—
February 20, 2000	Via Verde P&R	074206	MCTT	Effluent	80	7.2	36	11	3.0	4.92	4.39 J	8.74	1.35	1.00 U	10.6 U	0.37	0.78	0.088	110	110	50 U	200 U	—
February 20, 2000	Lakewood	074208	MCTT	Influent	100	6.9	22	8.0	24	8.42	11.0 J	58.1	2.84	1 U	41.6	0.18	0.95	0.091	500	600	50 U	240	—
February 20, 2000	Lakewood	074208	MCTT	Effluent	100	7.1	44	18	8.2	8.15	8.18 J	25.0	3.15	1.00 U	19.0	0.81	0.42 J	0.091	500	160	50 U	200 U	—
February 27, 2000	I-5/I-605 Intersection	074101	EDB [1]	Influent	100	7.6	110	58	34	19.3	34.2	110.0	8.49	3.99	57.8	0.75	2.1	0.25 J	500	1,000	50 U	460	—
February 27, 2000	I-5/I-605 Intersection	074101	EDB [1]	Effluent	100	7.5	120	48	52	18.6	33.4	91.3	9.06	4.01	47.3	0.77	2.6	0.85 J	500	1,200	50 U	510	—
February 27, 2000	I-605/SR-91 Intersection	074102	EDB [2]	Influent	100	7.8	160	73	110	39.9	124	541	14.5	3.92	263	1.5	2.7	0.5 J	2,800	2,200 J	50 U	820 J	—
February 27, 2000	I-605/SR-91 Intersection	074102	EDB [2]	Effluent	100	7.8	270	—	19	37.0	38.5	250	24.3	3.55	175	1.8	—	0.69 J	1,700	1,100 J	50 U	220 J	—
February 27, 2000	Alameda MS	074201	Oil/Water Sep.	Influent	—	7.2	94	30	37	—	—	—	—	—	—	—	—	—	—	970	50 U	260	5.0 U
February 27, 2000	Alameda MS	074201	Oil/Water Sep.	Effluent	—	7.1	52	18	170	—	—	—	—	—	—	—	—	—	—	490	50 U	250	5.0 U
February 27, 2000	Eastern Regional MS	074202	Media Filter	Influent	84	7.2	45	15	31	15.3	24.0	72.7	8.02	1.81	37.1	0.79	1.1	0.13 J	300	1,100 J	50 U	340 J	—
February 27, 2000	Eastern Regional MS	074202	Media Filter	Effluent	98	7.0	56	24	6.2	8.63	4.71	25.1	7.51	1.30	20.4	1.2	0.84	0.058	500	390 J	50 U	200 UJ	—
February 27, 2000	Foothill MS	074203	Media Filter	Influent	100	6.9	30	5.6	38	11.9	17.8	226	4.49	1.62	155	0.66	1.2	0.036 J	24,000	1,100 J	50 U	220 J	—
February 27, 2000	Foothill MS	074203	Media Filter	Effluent	99	7.1	60	31	7.4	6.96	2.34	41.3	5.52	1.00 U	34.4	0.93	0.14	0.097	21	100 UJ	50 U	200 UJ	—
February 27, 2000	Termination P&R	074204	Media Filter	Influent	100	7.4	54	18	96	23.8	16.5	156	6.90	1.00 U	55.5	0.68	1.8	0.23	220	1,400 J	50 U	410 J	—
February 27, 2000	Termination P&R	074204	Media Filter	Effluent	99	7.3	90	28	1.0 U	6.53	1.00 U	21.5	6.33	1.00 U	20.2	1.0	0.5	0.069	2 U	100 J	50 U	200 UJ	—
February 27, 2000	Via Verde P&R	074206	MCTT	Influent	100	6.8	25	12	26	5.40	4.89	69.3	1.75	1.00 U	33.3	0.70	1.6	0.16 J	500	230	50 U	200 U	—
February 27, 2000	Via Verde P&R	074206	MCTT	Effluent	65	7.8	45	17	7.6	2.16	1.00 U	4.92 U	1.25	1.00 U	4.40 U	0.70	0.56	0.084	50	160 J	50 U	200 UJ	—
February 27, 2000	Lakewood	074208	MCTT	Influent	100	6.9	32	12	8.5	7.87	2.40	83.2	5.37	1.00 U	81.3	0.63	1.4	0.12 J	30	830 J	50 U	200 J	—
February 27, 2000	Lakewood	074208	MCTT	Effluent	87	7.0	46	17	7.4	3.81	1.00 U	17.7	3.00	1.00 U	17.4	0.98	0.48	0.093	21	210 J	50 U	200 UJ	—

PRELIMINARY DATA

Submitted 6/16/00

BMP Retrofit Pilot Study, Stormwater Lab Data - District 7 (Brown and Caldwell Sites)

Sample Date	BMP Location	Site ID	BMP Type	Sampling Location	% Storm Capture	pH	Specific Conductance (µmhos/cm)	Hardness (mg/L)	TSS (mg/L)	Total Metals (ug/L) Cu	Pb	Zn	Dissolved Metals (ug/L) Cu	Pb	Zn	Nitrate Nitrogen (mg/L)	TKN (mg/L)	Total P (mg/L)	Fecal Coliform (MPN/100mL)	TPH Diesel (µg/L)	TPH Gasoline (µg/L)	TPH Oil (µg/L)	Oil & Grease (mg/L)
Storm Water Matrix																							
March 8, 2000	I-5/I-605 Intersection	074101	EDB [1]	Influent	79	7.4	75	30	91	29.8 J	94.7 J	219.0 J	6.42	6.89	42.9	0.51	1.30 J	0.380	5,000	450	50 U	200 U	---
March 8, 2000	I-5/I-605 Intersection	074101	EDB [1]	Effluent	97	7.3	71	30	50	15.2	41.8	82.9	8.35	2.20	23.9 U	0.40	0.90	0.32	4,000	830	50 U	290	—
March 8, 2000	I-605/SR-91 Intersection	074102	EDB [2]	Influent	87	7.7	620	190	41	33.7	185	288	14.5	13.5	176	9.5	2.1 J	0.24	300	470	50 U	200 U	---
March 8, 2000	I-605/SR-91 Intersection	074102	EDB [2]	Effluent	100	7.3	97	46	14	16.3	55.2	115	10.3	8.10	75.6	0.60	1.5	0.34	300	1800	50 U	710 U	---
March 8, 2000	Alameda MS	074201	Oil/Water Sep.	Influent	—	7.5	41	14	9.3	— —	— —	—	—	—	—	—	—	—	—	200	50 U	200 U	5.0 U
March 8, 2000	Alameda MS	074201	Oil/Water Sep.	Effluent	---	6.7	50	20	130	— —	— —	—	—	—	—	—	—	—	—	270	50 U	200 U	5.0 U
March 8, 2000	Eastern Regional MS	074202	Media Filter	Influent	99	6.2 J	27	10	81	15.0	43.2	106	3.29	1.55	39.9	1.6	1.1	0.15	500	310	50 U	200 U	—
March 8, 2000	Eastern Regional MS	074202	Media Filter	Effluent	100	7.3	32	9.5	13	4.79	7.03	24.3 U	3.03	1.00 U	1.0 U	0.44	0.45	0.066	500	140	50 U	200 U	—
March 8, 2000	Foothill MS	074203	Media Filter	Influent	99	6.9	33	18	51	29.1	19.2	229	18.0	2.80	157	0.39	0.84 J	0.21	3,300	390	50 U	200 U	—
March 8, 2000	Foothill MS	074203	Media Filter	Effluent	100	7.1	47	15	8.2	9.29	3.72	102	7.00	1.00 U	87.4	0.62	0.48	0.092	2,100	200	50 U	200 U	—
March 8, 2000	Termination P&R	074204	Media Filter	Influent	100	7.4 J	36	8.0	25	8.18	5.25	62.9	2.65	1.00 U	16.5 U	0.65	0.73	0.083	90	420	50 U	200 U	—
March 8, 2000	Termination P&R	074204	Media Filter	Effluent	99	7.2	59	6.0	2.5	3.98	1.00 U	20.5 U	3.68	1.00 U	15.8 U	0.73	0.39 U	0.048	11	100	50 U	200 U	—
March 8, 2000	Via Verde P&R	074206	MCTT	Influent	100	6.9 J	14	2.0	37	6.14	10.9	87.9	1.20	1.00 U	23.5 U	0.16	0.95	0.14	80	220	50 U	200 U	—
March 8, 2000	Via Verde P&R	074206	MCTT	Effluent	100	3.4 R	210 R	2 R	6.6 R	1.56 R	1.0 R	9.27 R	1.38 R	1.00 R	9.28 R	8.60 R	0.56 R	0.075 R	50	100 U	50 U	200 U	—
March 8, 2000	Lakewood	074208	MCTT	Influent	68	6.8	21	4.9	18	4.50	3.31	51.5	1.98	1.0 U	32.7	0.38	0.78 J	0.076	350	390	50 U	200	—
March 8, 2000	Lakewood	074208	MCTT	Effluent	100	7.2	40	10	1.5	1.62	1.00 U	6.66 U	1.46	1.00 U	1.0 U	0.69	0.45 U	0.057	170	100 U	50 U	200 U	—
April 17, 2000	I-5/I-605 Intersection	074101	EDB [1]	Influent	75	7.1	95	33 J	150	30	89	220	9.4	5.3	65	1.2	2.3	0.70	—	---	---	—	---
April 17, 2000	I-5/I-605 Intersection	074101	EDB [1]	Effluent	100	7.1	90	38 J	190	20	72	130	5.8	1.4	15	0.62	1.4	0.72	---	---	—	—	---
April 17, 2000	I-605/SR-91 Intersection	074102	EDB [2]	Influent	89	7.6	100	36 J	58	36	120	240	14	6.2	79	0.85	1.3	0.35	1600	8500 J	50 U	3200 J	—
April 17, 2000	I-605/SR-91 Intersection	074102	EDB [2]	Effluent	100	7.1	120	37 J	13	22	40	110	16	5.0	79	0.98	2.1	0.62	500	990	50 U	220	—
April 17, 2000	Alameda MS	074201	Oil/Water Sep.	Influent	NA	6.9	470	160	30	—	---	---	—	---	---	---	—	—	---	3100	50 U	420	13 J
April 17, 2000	Alameda MS	074201	Oil/Water Sep.	Effluent	NA	6.7	61	20	34	---	---	—	—	---	---	---	—	---	---	690	50 U	200 U	5.0 UJ
April 17, 2000	Eastern Regional MS	074202	Media Filter	Influent	99	6.7	42	17 J	62	20	26	86	7.3	1.0 U	35	0.35	0.92	0.21	—	---	---	---	
April 17, 2000	Eastern Regional MS	074202	Media Filter	Effluent	100	6.9 J	50	18 J	10	8.0	4.0	23	6.9	1.0	19	0.57	0.50 U	0.098	—	---	—	—	
April 17, 2000	Foothill MS	074203	Media Filter	Influent	99	6.5	52	36 J	89	17	35	360	6.8	3.1	220	0.21	1.5	0.28	—	—	—	---	
April 17, 2000	Foothill MS	074203	Media Filter	Effluent	99	6.9	70	28 J	19	9.3	5.8	160	7.3	1.3	110	0.16	0.39	0.27	—	---	---	---	
April 17, 2000	Termination P&R	074204	Media Filter	Influent	97	6.8	61	18 J	100	27	13	210	16	1.5	130	0.58	3.0	0.31	—	---	—	—	
April 17, 2000	Termination P&R	074204	Media Filter	Effluent	100	6.9	73	21 J	6.2	14	1.4	59	13	1.0 U	57	0.90	0.39	0.14	---	—	—	—	
April 17, 2000	Via Verde P&R	074206	MCTT	Influent	100	6.6	26	16 J	49	7.0	7.6	120	3.6	1.0 U	44	0.37	1.7	0.46	300	580	50 U	200 U	
April 17, 2000	Via Verde P&R	074206	MCTT	Effluent	100	6.9	59	21 J	8.7	4.8	1.3	9.3	4.6	1.0 U	8.0	0.67	1.6	0.18	170	370	50 U	200 U	
April 17, 2000	Lakewood	074208	MCTT	Influent	95	6.6	45	21 J	25	24	3.8	160	18	1.0 U	120	0.45	1.8	0.22	26	7700	50 U	1100	
April 17, 2000	Lakewood	074208	MCTT	Effluent	100	7.1	74	19 J	3.1	6.6	1.0	14	5.5	1.0 U	11	0.48	1.4	0.14	300	350	50 U	200 U	

* Less than 12 aliquots resulting in insufficient volume to perform all required analyses.
NR - Not Reported. Analysis was performed to comply with holding time requirements. However, paired samples were not successfully collected.
"---" - Not Analyzed

(1) Lined Extended Detention Basin.
(2) Unlined Extended Detention Basin.
(3) Although event was not successful, analyses were performed to comply with holding time requirements.

MS - Maintenance Station
NR - Not Reported. Analysis was performed to comply with holding time requirements. However, paired samples were not successfully collected.
"---" - Not Analyzed

PRELIMINARY DATA

Submitted 6/29/00

BMP Retrofit Pilot Study, Monthly Wet Basin Baseline Lab Data - District 11 (Kinnetic Laboratories, Inc.)

Sample Date	BMP Location	Site ID	BMP Type	Sampling Location	% Storm Capture	pH	Specific Conductance (umhos/cm)	Hardness (mg/L)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	TOC (mg/L)	Total (µg/L)								Dissolved (µg/L)							Nitrate-Nitrogen (mg/L)	TKN (mg/L)	Ammonia (mg/L)	Total P (mg/L)	Diss P (mg/L)	Fecal Coliform (MPN/100 ml)	TPH Diesel (µg/L)	TPH Gasoline (µg/L)	TPH Oil (µg/L)
													As	Cd	Cr	Cu	Pb	Ni	Zn	As	Cd	Cr	Cu	Pb	Ni	Zn								
Storm Water Matrix																																		
January 25, 2000	SR56/I-5-IN	111101	Extended Detention Basin	Influent	100	7.3	320	69		100						46	15	120						20	1 U	21	NA2	4.1		0.67		3000J	5700J	50 U	8100J
January 25, 2000	SR56/I-5-EFF	111101	Extended Detention Basin	Effluent	100	7.5	500	120		34						32	5.5	42						26	1.5	23	NA2	2.9		0.24		NA	NA	NA	NA
January 25, 2000	SR78/I-15-IN	111102	Extended Detention Basin	Influent	100	7.7	260	83		82						63	41	270						29	1 U	38	4.7	4.6		0.66		400J	7100J	50 U	9400J
January 25, 2000	SR78/I-15-EFF	111102	Extended Detention Basin	Effluent	100	7.7	300	110		48						50	29	200						27	1.4	105	4.2	8.9		0.5		800J	6900J	50 U	9300J
January 25, 2000	LaCostaWB-IN	111104	Wet Basin	Influent	100	7.5	310	98		170						100	170	360						40	39	120	5.7	8.1		0.64		700J	12000J	50 U	16000J
January 25, 2000	LaCostaWB-EFF	111104	Wet Basin	Effluent	100	8.4	2700	1000		4						18	1.1	41						16	1	40	1.1	3.1		1.5		8	340J	50 U	490J
January 25, 2000	KearnyMS-IN	112201	Compost Filter	Influent	100	7.3	260	91		86						140	34	580						100	9.5	370	2.5	7.6		0.57		NA	NA	NA	NA
January 25, 2000	KearnyMS-EFF	112201	Compost Filter	Effluent	100	7.6	360	130		70						62	28	310						17	1.4	92	1.9	5.3		0.28		NA	NA	NA	NA
January 25, 2000	EsconMS-IN	112202	Sand Filter	Influent	98.1	6.8	130	38		68						32	12	310						22	2.4	210	1.1	3.5		0.59		3000J	4900J	50 U	6100J
January 25, 2000	EsconMS-EFF	112202	Sand Filter	Effluent	100	7.2	180	66		34						20	4.8	47						13	1 U	16	1.7	2.4		0.49		80J	2900J	50 U	2900J
January 25, 2000	LaCostaP&R-IN	112203	Sand Filter	Influent	100	6.8	150	31		170						75	26	620						22	1.7	220	1.7	7		1		130J	3900J	50 U	5500J
January 25, 2000	LaCostaP&R-EFF	112203	Sand Filter	Effluent	100	7.3	260	68		10						17	2.2	11						17	1.2	4.5U	2.4	3.5		0.38		8J	3500J	50 U	4400J
January 25, 2000	SR78/I5P&R-IN	112204	Sand Filter	Influent	100	6.2	150	28		30.0						36	14	260						28	5.8	200	2.5	7.9		0.66		13000J	2600J	50 U	3400J
January 25, 2000	SR78/I5P&R-EFF	112204	Sand Filter	Effluent	100	7.3	240	55		26.0						39	3.3	86						27	1 U	29	2.4	6.2		1.3		24000J	3100J	50 U	3800J
January 25, 2000	Melrose - IN	112205	Biofiltration Swale	Influent	100	6.8	310	85		34						110	6.5	720						88	1.3	570	3.4	11		0.35		3400J	14000J	50 U	23000J
January 25, 2000	Palomar - IN	112206	Biofiltration Swale	Influent	100	7.1	480	91		44						64	16	170						53	1.3	110	3.6	7		1		700J	8200J	50 U	13000J
January 25, 2000	Carlsbad MS-IN	112207	Biostrip/Infiltration Trench	Influent	100	6.4	200	45		140						150	44	360						93	5	200	1.5	4.8		0.62		3000J	6500J	50 U	8000J
February 16, 2000	SR56/I-5-IN	111101	Extended Detention Basin	Influent	100	7.9	240	40		82						26	15	130						12	1 U	22	1.2	1.7		0.46		900J	2000*J	50 U	3400*
February 16, 2000	SR56/I-5-EFF	111101	Extended Detention Basin	Effluent	100	7.9	330	63		36						15	5.9	40						11	1 U	17	0.93	1.2		0.27		300J	1400*J	50 U	2700*
February 16, 2000	SR78/I-15-IN	111102	Extended Detention Basin	Influent	100	8.0	140	47		100						51	83	440						15	3.8	100	1.4	2.6		1.2		300J	1000*J	50 U	1500*
February 16, 2000	SR78/I-15-EFF	111102	Extended Detention Basin	Effluent	99.3	7.5	220	59		46						21	18	120						11	1 U	31	0.93	1.7		0.35		1700J	1900*J	50 U	3500*
February 16, 2000	Manchester-IN	111105	Extended Detention Basin	Influent	99.6	7.2	150	35		330						230	440	1600						16	1 U	74	1.2	3.5		1.2		17000J	3100*J	50 U	5300*
February 16, 2000	Manchester-EFF	111105	Extended Detention Basin	Effluent	100	7.1	170	38		76						41	43	250						15	1 U	76	0.89	4.3		0.62		90000J	4100*J	50 U	8200*
February 16, 2000	LaCostaWB-IN	111104	Wet Basin	Influent	100	8.1	190	63		240						210	660	700						28	37	96	1.6	3.6		1.6		50000J	2400*J	50 U	4100*
February 16, 2000	LaCostaWB-EFF	111104	Wet Basin	Effluent	93.5	9.1	2300	720		28						17	4	41						13	2	34	0.033	3.5		1.1		17J	500*J	50 U	600*
February 16, 2000	KearnyMS-IN	112201	Compost Filter	Influent	100	7.4	110	34		100						140	56	600						40	5.3	220	1.2	2.8		0.52		8J	4100*J	50 U	4800*
February 16, 2000	KearnyMS-EFF	112201	Compost Filter	Effluent	100	7.5	150	43		90						58	28	320						30	4.6	130	1.2	2.3		0.47		50J	2100*J	50 U	3700*
February 16, 2000	EsconMS-IN	112202	Sand Filter	Influent	98.1	6.7	49	11		170						15	24	300						3.5	1 U	110	0.38	2.0		0.72		240J	1900*J	50 U	2200*
February 16, 2000	EsconMS-EFF	112202	Sand Filter	Effluent	100	7.1	75	22		12						6	3.5	34						3	1 U	9U	0.42	0.77		0.34		500J	600*J	50 U	700*
February 16, 2000	LaCostaP&R-IN	112203	Sand Filter	Influent	100	7.1	110	22		30						12	9.0	110						9.3	3.2	64	0.65	3.0		0.45		800J	1800*J	50 U	2600*
February 16, 2000	LaCostaP&R-EFF	112203	Sand Filter	Effluent	100	7.4	140	38		1 U						6.7	1 U	5.2						6.5	1 U	3.2	0.69	1.1		0.18		2 UJ	690*J	50 U	100*
February 16, 2000	SR78/I5P&R-IN	112204	Sand Filter	Influent	100	7.7	550	130		420						31	23	360						12	1 U	49	1.3	13		2.3		13000J	1400*J	50 U	2100*
February 16, 2000	SR78/I5P&R-EFF	112204	Sand Filter	Effluent	100	7.7	490	110		10						14	1.9	54						10	1 U	24	1.8	3.6		1.0		30J	1100*J	50 U	1600*
February 16, 2000	Carlsbad MS-IN	112207	Biostrip/Infiltration Trench	Influent	100	7.0	120	23		120						73	29	200						46	1.6	93	0.82	3.0		0.63		50000J	1900*J	50 U	2500*
February 20, 2000	EsconMS-IN	112202	Sand Filter	Influent	99.7	6.8	31.0	5.5		40						9.1	7.2	230						2.7	1 U	97	0.1	0.69J		0.23J		50J	1600*J	50 U	2900*
February 20, 2000	EsconMS-EFF	112202	Sand Filter	Effluent	100	7.3	43	12		8						3.7	1.6	11						2.7	1 U	6.2	0.21	0.6J		0.091J		50J	800*J	50 U	1400*
February 20, 2000	SR78/I-15-IN	111102	Extended Detention Basin	Influent	99.6	7.9	110	25		48						28	29	260						8.8	2.4	48	1.6	0.84J		0.48J		110J	800*J	50 U	700*
February 20, 2000	SR78/I-15-EFF	111102	Extended Detention Basin	Effluent	100	7.4	170	48		14						10	6.6	57						7	1 U	27	1.1	0.8J		0.21J		300J	700*J	50 U	2300*
February 20, 2000	LaCostaWB-IN	111104	Wet Basin	Influent	100	7.7	97	28		60						800	310	440						11	4.2	28	0.84	0.83J		2.6J		170J	1200*J	50 U	1800*
February 20, 2000	LaCostaWB-EFF	111104	Wet Basin	Effluent	100	8.8	1900	560		12						13	11	36						12	4.1	33	0.062	1.9J		1.1J		110J	500*J	50 U	700*
February 20, 2000	LaCostaP&R-IN	112203	Sand Filter	Influent	99.9	6.7	41	4.3		58						14	20	210						3.8	1 U	25	0.37	0.9J		0.34J		1300J	500*J	50 U	800*
February 20, 2000	LaCostaP&R-EFF	112203	Sand Filter	Effluent	99.9	7.2	64	11		2						3.2	1 U	3.7						2.4	1 U	1.6	0.5	0.6J		0.17J		17J	400*J	50 U	1600*
February 20, 2000	SR56/I-5-IN	111101	Extended Detention Basin	Influent	97.3	8.1	270	48		125J						81	120	2100						9.2	1.6	29	0.45	0.52J		0.34J		300J	900*J	50 U	1400*
February 20, 2000	SR56/I-5-EFF	111101	Extended Detention Basin	Effluent	100	7.6	220	40		18						10	7	34						7	3.3	18	0.5	1.6J		0.25J		500J	600*J	50 U	800*
February 20, 2000	Manchester-IN	111105	Extended Detention Basin	Influent	98.4	7.4	76	19		92						44	55	280						14	7.6	110	0.58	1.1J		0.66J		110J	1500*J	50 U	2300*
February 20, 2000	Manchester-EFF	111105	Extended Detention Basin	Effluent	100	7.2	110	24		18						17	19	94						12	6.1	60	1.1	1.1J		0.24J		500J	1900*J	50 U	2900*
February 20, 2000	SR78/I5P&R-IN	112204	Sand Filter	Influent	100	7.2	52	10		200						28	49	430						5.9	1 U	27	0.17	0.79J		1.4J		300J	400*J	50 U	500*
February 20, 2000	SR78/I5P&R-EFF	112204	Sand Filter	Effluent	100	8	68	11		4						4.1	1 U	8.8						4	1 U	5.8	0.44	0.71J		0.21J		240J	400*J	50 U	500*
February 20, 2000	Melrose-IN	112205	Biofiltration Swale	Influent	NA	NA	NA	NA		NA						NA	NA	NA						NA	NA	NA	NA	NA		NA		17J	1100*J	50 U	1600*
February 20, 2000	Melrose-EFF	112205	Biofiltration Swale	Effluent	NA	NA	NA	NA		NA						NA	NA	NA						NA	NA	NA	NA	NA		NA		17J	700*J	50 U	1000*
February 20, 2000	KearnyMS-IN	112201	Compost Filter	Influent	93.9	7.3	63	15		110						300	140	1000						20	1.6	110	0.45	1.8J		0.63J		1100J	2600*J	50 U	3900*
February 20, 2000	KearnyMS-EFF	112201	Compost Filter	Effluent	96.9	7.3	62	16		74						72	44	410						12	1.7	68	0.45	1.5J		0.47J		1700J	900*J	50 U	1300*
February 20, 2000	Carlsbad MS-IN	112207	Biostrip/Infiltration Trench	Influent	100	7	53	12		170						78	37	220						39	4.9	100	0.45	2J		0.82J		80000J	800*J	50 U	1100*
February 20, 2000	Carlsbad MS-EFF	112207	Biostrip/Infiltration Trench	Effluent	100	7.4	110	17		16						5.9	3	37						5.1	1 U	29	0.4	2J		0.69J		17J	600*J	50 U	1800*
February 20, 2000	Palomar-IN	112206	Biofiltration Swale	Influent	100	7.2	130	20		8						8.3	7.6	25						7.2	1.8	23	0.73	1.8J		0.81J		140J	2400*J	50 U	3600*
February 20, 2000	Palomar-EFF	112206	Biofiltration Swale	Effluent	100	7.5	88	20		36						19	25	93						9.7	2.9	41	0.52	1.4J		0.22J		1700J	800*J	50 U	1100*
March 5, 2000	EsconMS-IN	112202	Sand Filter	Influent	100	6.9	32	14		110J						7	9.8	250						2.6	1 U	170	0.34	1.3		0.36		NA	NA	NA	NA
March 5, 2000	EsconMS-EFF	112202	Sand Filter	Effluent	100	7.3	45	25		6J						1.8	1.1	7.7						1 U	1 U	1 U	0.46	0.43		0.14		NA	NA	NA	NA
March 5, 2000	SR78/I-15-IN	111102	Extended Detention Basin	Influent	100	8	90	34		100J						68	42	280						6.2	1.7	42	1.1	1.5		0.37		NA	NA	NA	NA
March 5, 2000	SR78/I-15-EFF	111102	Extended Detention Basin	Effluent	100	7.6	150	60		22J						10	7.9	52						7	1.8	32	0.68	0.86		0.25		NA	NA	NA	NA
March 5, 2000	LaCostaWB-IN	111104	Wet Basin	Influent	100	7.7	79	31		350J						9500	2300	2000						8	17	44	0.68	1.5		2.6		NA	NA	NA	NA
March 5, 2000	LaCostaWB-EFF	111104	Wet Basin	Effluent	100	8.7	1600	930		12J						14	5.2	45						12	2.2	36	1.3	1.6		1.2		NA	NA	NA	NA
March 5, 2000	LaCostaP&R-IN	112203	Sand Filter	Influent	100	6.7	42	15		46J						5.4	16	66						1.6	1 U	23	0.32	1.7		0.19		NA	NA	NA	NA
March 5, 2000	LaCostaP&R-EFF	112203	Sand Filter	Effluent	100	7.4	72	26		2J						3.2	1 U	3.2						3.3	1 U	3	0.47	0.52		0.16		NA	NA	NA	NA
March 5, 2000	SR56/I-5-IN	111101	Extended Detention Basin	Influent	100	8.1	200	52		64J						19	25	140						3.8	2.2	11	0.38	0.83		0.25		NA	NA	NA	NA
March 5, 2000	SR56/I-5-EFF	111101	Extended Detention Basin	Effluent	100	7.7	240	60		22J						8.7	10	30						5.6	2.5	13	0.38	0.5		0.2		NA	NA	NA	NA
March 5, 2000	Manchester-IN	111105	Extended Detention Basin	Influent	100	7.8	63	24		400J						97	360	940						8.6	9.6	67	0.43	1.5		0.86		NA	NA	NA	NA
March 5, 2000	Manchester-EFF	111105	Extended Detention Basin	Effluent	100	7.3	63	29		33J						21	34	120						10	6.3	63	0.48	1.3		0.33		NA	NA	NA	NA
March 5, 2000	Melrose-IN	112205	Biofiltration Swale	Influent	100	6.9	81	22		26J						22	6.4	230						11	1 U	170	0.98	2.1		0.16		1700	1100*	50 U	1500*
March 5, 2000	KearnyMS-IN	112201	Compost Filter	Influent	99.5	7.3	67	27		200J						340	55	1900						23	3.2	120	0.41	1.2		0.26		NA	NA	NA	NA
March 5, 2000	KearnyMS-EFF	112201	Compost Filter	Effluent	100	7.2	58	23		34J						32	16	180						13	1 U	78	0.42	1.5		0.34		NA	NA	NA	NA
March 5, 2000	Carlsbad MS-IN	112207	Biostrip/Infiltration Trench	Influent	92.5	6.8	53	20		88J						65	20	160						30	1.1	84	0.22	1.7		0.33		90000R	1400*	50 U	1900
March 5, 2000	Carlsbad MS-EFF	112207	Biostrip/Infiltration Trench	Effluent	100	7.6	94	28		18J						3.7	3.6	32						2.7	1 U	23	0.25	1.5		0.5		130R	400*	50 U	500
March 5, 2000	Palomar-IN	112206	Biofiltration Swale	Influent	100	7.6	79	26		28J						19	36	99						8.6	6.9	42	0.45	1.2		0.2		300	4600*	50 U	5500
March 5, 2000	Palomar-EFF	112206	Biofiltration Swale	Effluent	100	7.3	82	30		12J						8.6	13	29						5.1	2.5	16	0.65	1.2		0.45		160	1300*	50 U	1700
March 8, 2000	KearnyMS-IN	112201	Compost Filter	Influent	100	7.5	90	28		270						1400	140	1300						25	6.7	170	0.49	2.2		0.62		NA	NA	NA	NA
March 8, 2000	KearnyMS-EFF	112201	Compost Filter	Effluent	100	7.4	95	30		170						64	59	410						23	5.4	160	0.53	1.8		0.45		NA	NA	NA	NA
March 8, 2000	SR78/I5P&R-IN	112204	Sand Filter	Influent	100	7.2	62	22		36						11	7.4	110						5.2	1 U	35	0.4	1.2		0.26		NA	NA	NA	NA
March 8, 2000	SR78/I5P&R-EFF	112204	Sand Filter	Effluent	100	7.5	100	31		1 U						5.2	1 U	8.5						5	1 U	6.5	0.68	1.6		0.68		NA	NA	NA	NA
April 17, 2000	Melrose-IN	112205	Biofiltration Swale	Influent	100	6.5	100	31		38						43	9.5	480						31	2.8	400	1.1	5.4		0.23		24000 J	< 50	< 50	9700
April 17, 2000	EsconMS-IN	112202	Sand Filter	Influent	95.3	6.4	43	27		46						9.4	9.7	270						5.5	1.2	170	0.2	1.7		0.24		NA	NA	NA	NA
April 17, 2000	EsconMS-EFF	112202	Sand Filter	Effluent	100	6.6	73	39		30						8.4	3.1	61						7	1.4	46	0.96	1.2		0.28		NA	NA	NA	NA
April 17, 2000	SR78/I-15-IN	111102	Extended Detention Basin	Influent	91.4	7.7	120	47		160						43	47	300						12	< 1	26	1.3	2.6		0.48		NA	NA	NA	NA

BMP Retrofit Pilot Study, Monthly Wet Basin Baseline Lab Data - District 11 (Kinnetic Laboratories, Inc.)

PRELIMINARY DATA

Submitted 6/29/00

												Total (µg/L)							Dissolved (µg/L)													
Sample Date	BMP Location	Site ID	BMP Type	Sampling Location	% Storm Capture	pH	Specific Conductance (umhos/cm)	Hardness (mg/L)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	TOC (mg/L)	As	Cd	Cr	Cu	Pb	Ni	Zn	As	Cd	Cr	Cu	Pb	Ni	Zn	Nitrate-Nitrogen (mg/L)	TKN (mg/L)	Ammonia (mg/L)	Total P (mg/L)	Diss P (mg/L)	Fecal Coliform (MPN/100 ml)	TPH Diesel (µg/L)	TPH Gasoline (µg/L)	TPH Oil (µg/L)
April 17, 2000	SR76/I-15-EFF	111102	Extended Detention Basin	Effluent	97.2	7.3	160	58		38						21	13		91				12	< 1		34	1	1.6		0.29		NA	NA	NA	NA
April 17, 2000	LaCostaWB-IN	111104	Wet Basin	Influent	100	7.8	140	57		230						71	270		330				17	9.4		43	1.8	4.9		0.68		NA	NA	NA	NA
April 17, 2000	LaCostaWB-EFF	111104	Wet Basin	Effluent	100	8	2600	910		4						31	5.4		92				27	2.5		85	8.2	1.7		1.1		NA	NA	NA	NA
April 17, 2000	LaCostaP&R-IN	112203	Sand Filter	Influent	100	6	82	23		70						18	27		170				8.4	2.9		81	0.68	3.8		0.42		NA	NA	NA	NA
April 17, 2000	LaCostaP&R-EFF	112203	Sand Filter	Effluent	100	6.7	130	41		10						12	1.4		1				10	< 1		9.8	1.1	2.3		0.36		NA	NA	NA	NA
April 17, 2000	SR56/I-5-IN	111101	Extended Detention Basin	Influent	100	7.7	200	56		46						23	17		92				7.9	< 1		13	0.64	1.8		0.21		NA	NA	NA	NA
April 17, 2000	SR56/I-5-EFF	111101	Extended Detention Basin	Effluent	99.8	7	150	44		44						20	12		57				12	< 1		17	0.61	1.2		0.24		NA	NA	NA	NA
April 17, 2000	Manchester-IN	111105	Extended Detention Basin	Influent	100	7.5	110	35		190						86	93		460				24	< 1		100	1.2	4.3		1.8		NA	NA	NA	NA
April 17, 2000	Manchester-EFF	111105	Extended Detention Basin	Effluent	100	7.1	160	56		59						42	27		170				29	< 1		91	0.88	3.6		0.44		NA	NA	NA	NA
April 17, 2000	KearnyMS-IN	112201	Compost Filter	Influent	100	6.9	120	40		98						100	39		660				53	5.9		360	1.2	5.2		0.51		NA	NA	NA	NA
April 17, 2000	KearnyMS-EFF	112201	Compost Filter	Effluent	100	6.9	120	37		46						61	18		400				37	3.7		280	1.5	3.9		0.41		NA	NA	NA	NA
April 17, 2000	Carlsbad MS-IN	112207	Biostrip/Infiltration Trench	Influent	100	6.6	100	28		66						79	22		250				51	1.4		160	0.51	4		0.4		NA	NA	NA	NA
April 17, 2000	Carlsbad MS-EFF	112207	Biostrip/Infiltration Trench	Effluent	100	7	120	30		12						10	4.5		66				7.5	< 1		49	0.7	2.2		0.42		NA	NA	NA	NA
April 17, 2000	Palomar-IN	112206	Biofiltration Swale	Influent	100	7.4	150	40		48						40	39		190				19	5		83	1.3	3		0.27		NA	NA	NA	NA
April 17, 2000	Palomar-EFF	112206	Biofiltration Swale	Effluent	100	6.9	200	46		22						18	13		49				11	< 1		26	1.9	4		0.74		NA	NA	NA	NA
April 17, 2000	SR78/I5P&R-IN	112204	Sand Filter	Influent	100	6.6	120	33		120						38	19		630				18	1.1		220	1.1	8.9		0.8		NA	NA	NA	NA
April 17, 2000	SR78/I5P&R-EFF	112204	Sand Filter	Effluent	100	6.7	210	71		14						28	1.3		59				20	< 1		35	2.3	5.8		0.81		NA	NA	NA	NA
October 26, 2000	SR56/I-5-IN	111101	Extended Detention Basin	Influent	99.74																								-			900			
October 26, 2000	SR56/I-5-EFF	111101	Extended Detention Basin	Effluent	100	7.4	240																				1.2		-		0.20	11,000			
October 26, 2000	Manchester-IN	111104	Extended Detention Basin	Influent	77																								-			9,000			
October 26, 2000	Manchester-EFF	111104	Extended Detention Basin	Effluent	100	7.3	150																				1.5		-		0.25	9,000			
October 26, 2000	LaCosta Wet-EFF	111105	Wet Basin	Effluent	100	8.1	2500																				0.12		-		1.5	50			
October 26, 2000	Kearny Mesa MS-IN	112201	Compost Filter	Influent	100																								-			9,000			
October 26, 2000	Kearny Mesa MS-EFF	112201	Compost Filter	Effluent	100																								-			3,000			
October 26, 2000	Escondido MS-IN	112202	Sand Filter	Influent	100																								-			50,000			
October 26, 2000	LaCosta P&R-IN	112203	Sand Filter	Influent	100																								-			30			
October 26, 2000	LaCosta P&R-EFF	112203	Sand Filter	Effluent	100	7.1	100																				1.0		-		0.15	80			
October 26, 2000	SR78/I-5-IN	112204	Sand Filter	Influent	97.42																								-			5,000			
October 26, 2000	SR78/I-5-EFF	112204	Sand Filter	Effluent	98.39	7.0	140																				1.2		-		0.37	5,000			
October 26, 2000	Melrose-IN	112205	Biofiltration Swale	Influent	100																								-			700			
October 26, 2000	Carlsbad MS-IN	112207	Biostrip/Infiltration Trench	Influent	100																								-			9,000			
October 29, 2000	SR78/I-15-IN	111102	Extended Detention Basin	Influent	89.86																								-			NA1	NA1	NA1	NA1
October 29, 2000	SR78/I-15-EFF	111102	Extended Detention Basin	Effluent	94.16	7.4	140	49	62	110	16	15	1.3	0.52	2.2	19	24	4.0	110	1.0	0.2U	1.2	12	1U	2.6	36	1.2	1.5	-	0.24	0.20	NA1	NA1	NA1	NA1
October 29, 2000	Manchester-IN	111104	Extended Detention Basin	Influent																									-			NA1	NA1	NA1	NA1
October 29, 2000	Manchester-EFF	111104	Extended Detention Basin	Effluent	100																								-			NA1	NA1	NA1	NA1
October 29, 2000	Escondido MS-IN	112202	Sand Filter	Influent	100																								-			NA1	NA1	NA1	NA1
October 29, 2000	Escondido MS-EFF	112202	Sand Filter	Effluent	100	6.8	110	34	22	92	24	24	1.2	1.1	2.0	9.6	3.0	3.6	93	0.93	0.27	1U	4.6	1U	3.0	44	1.8	1.0	-	0.15	0.085	NA1	NA1	NA1	NA1
October 29, 2000	SR78/I-5-IN	112204	Sand Filter	Influent	100																								-			NA1	NA1	NA1	NA1
October 29, 2000	SR78/I-5-EFF	112204	Sand Filter	Effluent	99.67																								-			NA1	NA1	NA1	NA1
October 29, 2000	Melrose-IN	112205	Biofiltration Swale	Influent	99.64																								-			NA1	NA1	NA1	NA1
October 29, 2000	Carlsbad MS-IN	112207	Biostrip/Infiltration Trench	Influent	99.18																								-			NA1	NA1	NA1	NA1
October 29, 2000	Carlsbad MS-EFF	112207	Biostrip/Infiltration Trench	Effluent	100																								-			NA1	NA1	NA1	NA1

NA1 not initially analyzed, results will be available at a later date

NA2 results cancelled, samples exceeded hold time

* Sample contains hydrocarbons that does not match diesel and oil pattern. However, quantitation is based on diesel oil standard

BMP Retrofit Pilot Study, Monthly Wet Basin Baseline Lab Data - District 11 (Kinnetic Laboratories, Inc.)

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Submitted 11/19/2000

Sample Date	Location	Site ID	BMP Type	pH	Specific Conductance (umhos/cm)	Hardness (mg/L)	TSS (mg/L)	TDS (mg/L)	DOC (mg/L)	TOC (mg/L)	Total (ug/L)							Dissolved (ug/L)							Nitrate-Nitrogen (mg/L)	TKN (mg/L)	Total P (mg/L)	Diss. P (mg/L)	Fecal Coliform (MPN/ 100 ml)	TPH - Diesel (ug/L)	TPH - Oil (ug/L)	TPH - Gasoline (ug/L)
											As	Cd	Cr	Cu	Pb	Ni	Zn	As	Cd	Cr	Cu	Pb	Ni	Zn								
Groundwater Matrix																																
10/27/1999	Carlsbad MS GW Well (Baseline)	112207	Biofiltration strip/ infiltration trench	6.5	16000	2500	12							29	0.5		18				22	0.5		15	58.0	0.7	0.21		200 U	100 U	200 U	50 U
2/24/2000	Carlsbad MS GW Well	112207	Biofiltration strip/ infiltration trench	6.5	17000	3600	12							11	1.9		5.1				10	1 U		4.9	37.0	0.43	0.26		2 U	100 U	100 U	50 U
1/18/2000	La Costa Infiltration (Baseline)	111103	Infiltration Basin	7.8	110000	14000	380							55	6		42				49	2.6		28	0.5U	14	1.1		200 U	100 U	200 U	50 U
2/29/2000	La Costa Infiltration	111103	Infiltration Basin	7.4	120000	14000	120							1 U	1 U		14				1 U	1 U		7.4	0.5U	15	1.3		2 U	500	600	50 U
9/19/2000	Carlsbad MS GW Well (Baseline)	112207	Biofiltration strip/ infiltration trench	6.7	15000	3100	26	8900	2.9	3.1	1.3	0.2U	4.5	4.6	1.7	4	3.2	1.1	0.2U	4.4	3.9	1.3	3	3.0	110.0	0.44	0.21	0.12	<2	100U	200U	50U
9/20/2000	La Costa Infiltration (Baseline)	111103	Infiltration Basin																													

BMP Retrofit Pilot Study, Monthly Wet Basin Baseline Lab Data - District 11 (Kinnetic Laboratories, Inc.)

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Submitted 11/19/00

				Wet Wt. Values Total (ug/L)								Dry Wt. Values Total (ug/L)											Grain Size Distribution
Sample Date	Location	Site ID	BMP Type	As	Cd	Cr	Cu	Pb	Ni	Zn	TRPH (mg/kg)	As	Cd	Cr	Cu	Pb	Ni	Zn	TRPH (mg/kg)	% Solids	%Sand	%Silt	% Clay
Sediment Matrix																							
2/8/2000	LaCostaIB, Top Section	111103	Infiltration Basin				3.8	6.3		25	21				4.2	7.1		28	24		91.7	5.7	2.6
2/8/2000	LaCostaIB, Mid Section	111103	Infiltration Basin				3.6	3.4		15	55				4.2	4		17	64		87.2	8.7	4.1
2/8/2000	LaCostaIB, Bottom Section	111103	Infiltration Basin				3.7	2.5		16	57				4.5	3.1		20	71		85.7	9.8	4.4
9/12/2000	LaCostaIB, Top Section	111103	Infiltration Basin	5.7	0.1U	9.9	3.7	7.7	2.1	25	100U	6.1	0.1U	11	4.0	8.2	2.2	26	100U	94	91.7	5.4	2.8
9/12/2000	LaCostaIB, Mid Section	111103	Infiltration Basin	2.5	0.1U	9.9	3.2	5.4	3.0	18	100U	2.8	0.1U	11	3.5	5.9	3.3	19	100U	91	87.2	7.1	5.7
9/12/2000	LaCostaIB, Bottom Section	111103	Infiltration Basin	0.66	0.1U	12	3.2	3.0	3.9	10	100U	0.74	0.1U	14	3.6	3.4	4.4	12	100U	89	82.4	9.3	8.3

BMP Retrofit Pilot Study, Monthly Wet Basin Baseline Lab Data - District 11 (Kinnetic Laboratories, Inc.)

PRELIMINARY DATA

Submitted 11/19/00

												Total (ug/L)							Dissolved (ug/L)														
Sample Date	Location	Site ID	BMP Type	% Storm Capture	pH	Specific Conductance (umhos/cm)	Hardness (mg/L)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	TOC (mg/L)	As	Cd	Cr	Cu	Pb	Ni	Zn	As	Cd	Cr	Cu	Pb	Ni	Zn	Nitrate-Nitrogen (mg/L)	TKN (mg/L)	Ammonia (mg/L)	Total P (mg/L)	Diss P (mg/L)	Fecal Coliform (MPN/100 ml)	TPH - Diesel (ug/L)	TPH - Oil (ug/L)	TPH - Gasoline (ug/L)
Baseline																																		
9/30/1999	La Costa WET inflow (Baseline)	111105	Wet Basin	NA	7.5	3100	1700	-	1U	-	-	-	-	-	130	3.3	-	56	-	-	-	130	2.0	-	52	25	2.2		3.7	-	200U	1100*	310	50U
10/28/1999	La Costa WET inflow (Baseline)	111105	Wet Basin	NA	7.5	2900	910	-	2	-	-	-	-	-	120	1.2	-	72	-	-	-	110	1.2	-	70	11	0.8		3.6	-	200U	100U	200U	50U
11/30/1999	La Costa WET inflow (Baseline)	111105	Wet Basin	NA	7.4	2700	1100	-	9	-	-	-	-	-	60	3.8	-	38	-	-	-	58	1.8	-	37	12	1.5		3.0	-	200U	100U	200U	50U
12/28/1999	La Costa WET inflow (Baseline)	111105	Wet Basin	NA	7.5	2800	1100	-	44	-	-	-	-	-	80	8.2	-	140	-	-	-	53	1.9	-	100	20	2.0		4.6	-	50	100U	100U	50U
2/3/2000	La Costa WET inflow (Baseline)	111105	Wet Basin	NA	7.3	2800	950	-	50	-	-	-	-	-	170	17	-	190	-	-	-	95	3.2	-	92	22	2.7		3.4	-	9000	200U	200U	50U
3/1/2000	La Costa WET inflow (Baseline)	111105	Wet Basin	NA	7.5	2600	1100	-	6	-	-	-	-	-	75	5.2	-	110	-	-	-	61	2.1	-	94	18	2.1		1.5	-	1100	900*	900	50U
3/30/2000	La Costa WET inflow (Baseline)	111105	Wet Basin	NA	7.5	3000	1000	-	1U	-	-	-	-	-	64	1.5	-	81	-	-	-	62	1.3	-	77	23	1.5		1.5	-	50	680	250U	50U
5/3/2000	La Costa WET inflow (Baseline)	111105	Wet Basin	NA	7.4	2600	850	-	16	-	-	-	-	-	45	1U	-	88	-	-	-	39	1U	-	76	24	2.7		1.8	-	50000	13000	16000	50U
7/5/2000	La Costa WET inflow (Baseline)	111105	Wet Basin	NA	7.5	2900	940	-	20	-	-	-	-	-	63	22	-	120	-	-	-	35	1.2	-	91	22	2.0		6.6	-	2200	100U	200U	50U
7/5/2000	La Costa WET outflow (Baseline)	111105	Wet Basin	NA	7.6	3300	1000	-	11	-	-	-	-	-	20	1U	-	50	-	-	-	10	1U	-	38	1.1	6.3		7.0	-	240	220	200U	50U
8/4/2000	La Costa WET inflow (Baseline)	111105	Wet Basin	NA	7.6	2800	1000	-	7	-	-	-	-	-	31	3.9	-	74	-	-	-	21	1.3	-	63	17	1.9		2.8	-	30	100U	200U	50U
8/4/2000	La Costa WET outflow (Baseline)	111105	Wet Basin	NA	7.7	3000	1100	-	15	-	-	-	-	-	7	1.1	-	29	-	-	-	5	1U	-	24	0.68	2.7		1.8	-	30	120	200U	50U
9/7/2000	La Costa WET inflow (Baseline)	111105	Wet Basin	NA	7.5	3000	1200	2200	1U	8.6	4.5	0.75	0.2U	1U	9.3	1.4	2.9	39	0.73	0.20U	1U	9.1	1	2.9	33	11	1.2		1.0	0.89	30	100U	200U	50U
9/7/2000	La Costa WET outflow (Baseline)	111105	Wet Basin	NA	8.7	3000	1100	2200	28	11	12	2.3	0.31	1U	12	1.1	3.9	54	2.1	0.29	1U	9.5	1U	4	47	3.1	2.6		1.5	0.93	30	100U	200U	50U
10/5/2000	La Costa WET inflow (Baseline)	111105	Wet Basin	NA																								-			300			
10/5/2000	La Costa WET outflow (Baseline)	111105	Wet Basin	NA																								-			27			
11/8/2000	La Costa WET inflow (Baseline)	111105	Wet Basin	NA																											500			
11/8/2000	La Costa WET outflow (Baseline)	111105	Wet Basin	NA																											30			

*Quantified as diesel but chromatographic pattern does not match that of diesel

APPENDIX F: BIOLOGICAL MONITORING REPORTS – AUGUST, SEPTEMBER, OCTOBER 2000

CALTRANS BMP Retrofit Pilot Program
Districts 7 and 11

BIOLOGICAL MONITORING REPORT
for
August 2000

Prepared for:

Robert Bein, William Frost & Associates
14725 Alton Parkway
Irvine, CA 92619
Contact: Mr. Trevor Smith
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Prepared by:

DUDEK
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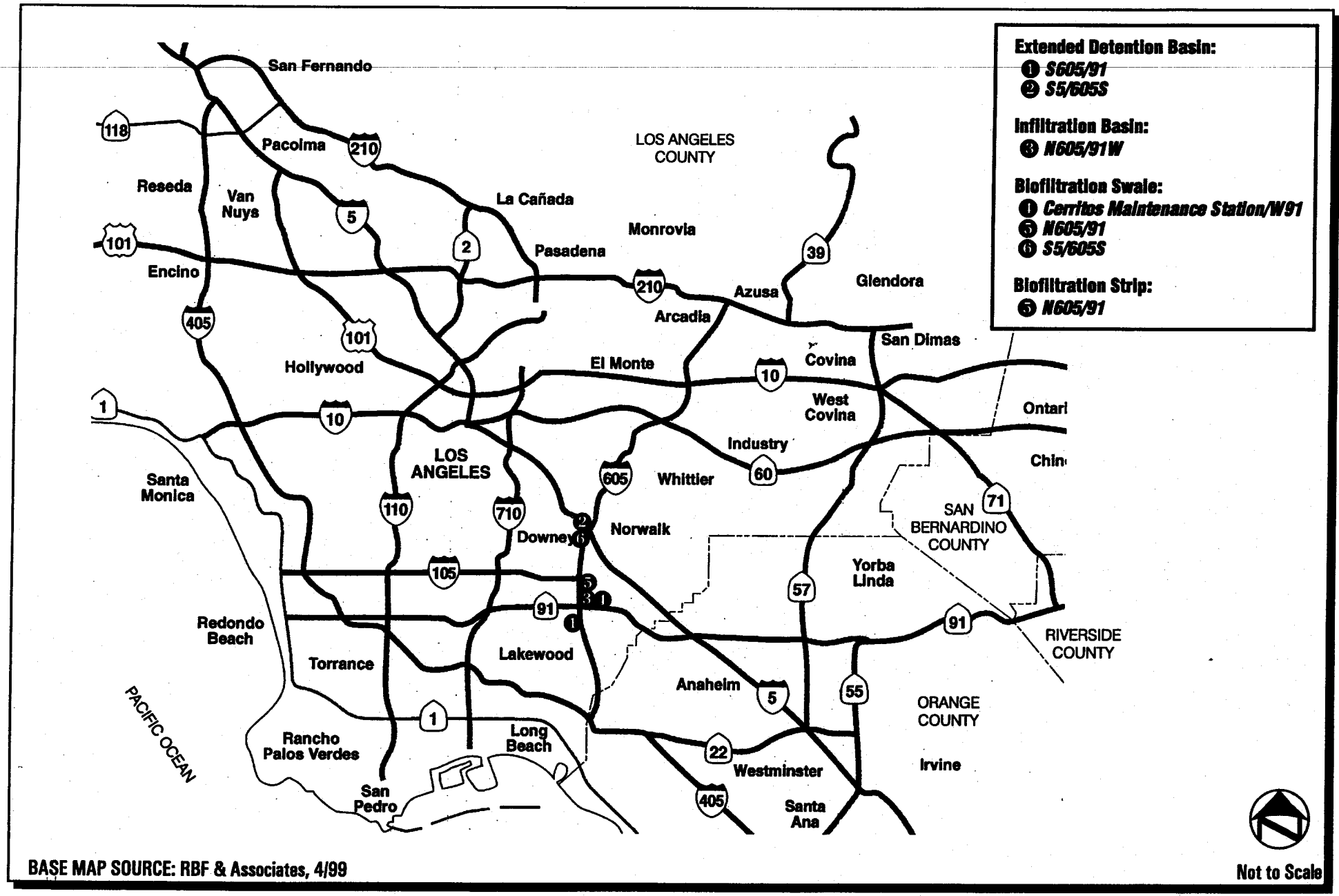
Six District 7 BMP sites (*Figure 1*) and nine District 11 BMP sites (*Figure 2*) are monitored monthly by Dudek and Associates, Inc. (DUDEK). DUDEK previously determined that the 15 sites may have the potential to become significant from a wildlife perspective. DUDEK wildlife biologist Jeff D. Priest conducted visits for the District 11 BMPs and District 7 BMP's on September 7th and 8th, 2000. Survey conditions were appropriate for detection of wildlife (*i.e.*, partly cloudy to clear skies, mild temperatures, light breezes).

Table 1 presents a synopsis of potential issues related to each BMP site. A discussion of each BMP site follows the table.

TABLE 1
BMP LOCATIONS, TYPE, POTENTIAL BIOLOGICAL ISSUES AND SUMMARY OF FINDINGS

Location; BMP Type	Sensitive Species Activity/Type	Action	Gopher Mounds/ Action*	Ground Squirrel Holes/ Action*	Nesting Birds	Standing Water	Species Observed
I-605/SR-91; InfBa	No	N/A	Yes/None	No	No	No	rock dove.
I-5/I-605; ExtDB	No	N/A	Yes/None	No	No	No	mourning dove and side-blotched lizard.
I-605/SR-91; BiofSt	No	N/A	Yes/None	No	No	No	western fence lizard.
Cerritos MS; BiofSw	No	N/A	Yes/None	Yes/none	No	No	rock dove.
I-5/I605; BiofSw	No	N/A	Yes/None	No	No	No	rock dove.
I-605/SR-91; BiofSw	No	N/A	Yes/None	No	No	No	rock dove.
I-5/Manchester; ExtDB	No	N/A	No	No	No	No	European starling, house finch and cabbage butterfly.
I-5/SR-56; ExtDB	No	N/A	Yes/None	No	No	No	tiger swallowtail butterfly, Lorquin's admiral butterfly, house finch, brush rabbit and Anna's hummingbird.
I-15/SR-78; ExtDB	No	N/A	Yes/None	Yes/None	No	No	mourning dove
I-5/La Costa W; InfBa	No	N/A	No	No	No	No	western fence lizard
I-5/La Costa SE; WetBa	No	N/A	Yes/None	Yes/None	No	Yes	red-tailed hawk, western fence lizard, California towhee, house finch, mallard and bushtit.

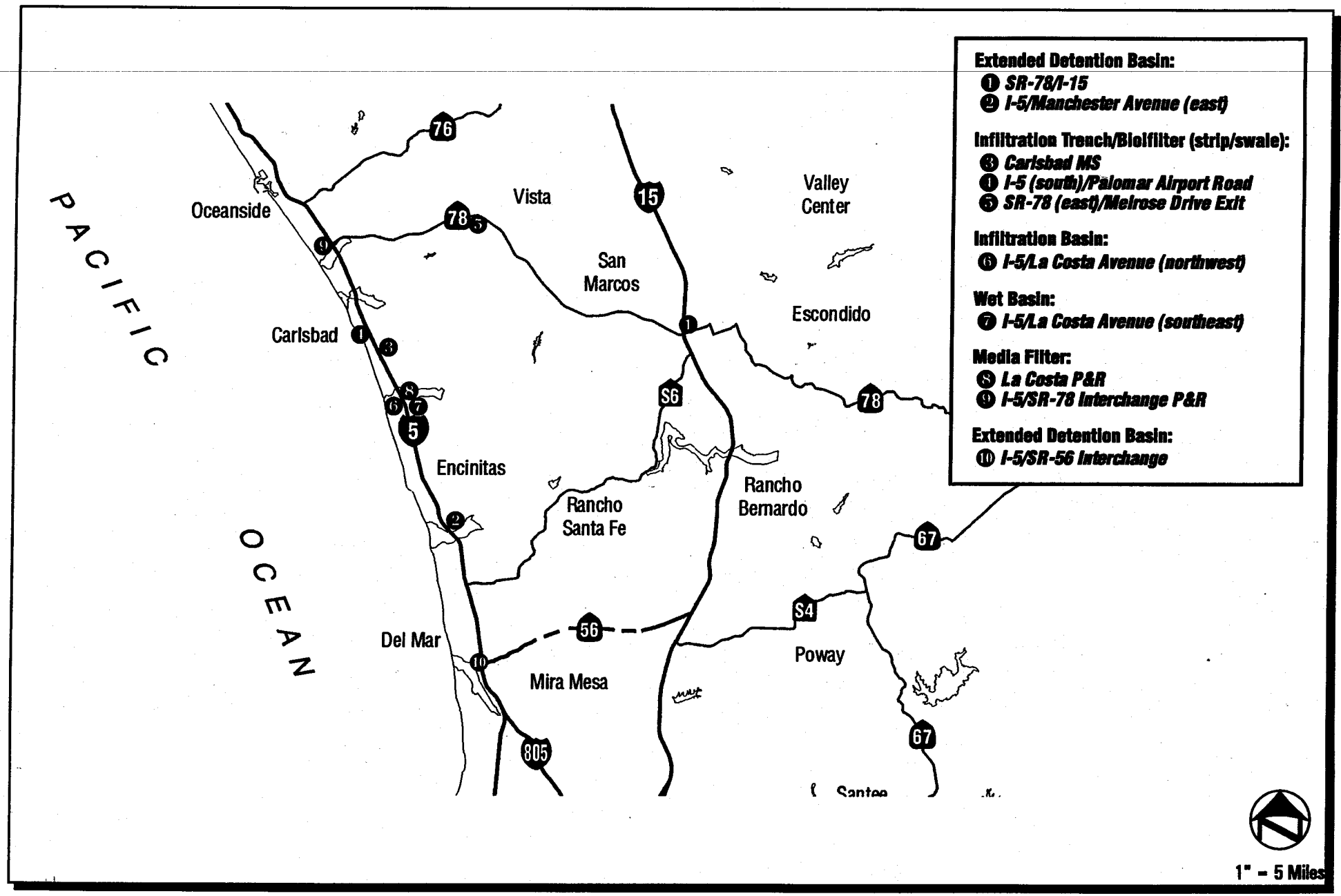


BASE MAP SOURCE: RBF & Associates, 4/99

Caltrans BMP Retrofit Pilot Program, LA & SD Counties - Biological Monitoring Report

Regional Location Map - District 7, Los Angeles

FIGURE 1



Caltrans BMP Retrofit Pilot Program, LA & SD Counties - Biological Monitoring Report

Regional Location Map - District 11, San Diego

FIGURE 2

TABLE 1 (*Continued*)
BMP LOCATIONS, TYPE AND POTENTIAL BIOLOGICAL ISSUES

Location; BMP Type	Sensitive Species Activity/Type	Action	Gopher Mounds/ Action*	Ground Squirrel Holes/ Action*	Nesting Birds	Standing Water	Species Observed
SR-78/Melrose; BiofSw	No	N/A	Yes/None	Yes/None	No	No	red-tailed hawk, house finch, western fence lizard and cabbage butterfly.
I-5/Palomar Airport; BiofSw	No	N/A	Yes/None	Yes/None	No	No	none
I-5/La Costa P&R; MedFi	No	N/A	No	No	No	No	house finch, common raven and lesser goldfinch. These species were observed either inside the media filter's fence, or detected visually in the vicinity of the filter.
I-5/SR-78 P&R; MedFi	No	N/A	No	No	No	No	tern sp.

InfBa - Infiltration Basin
ExtDB - Extended Detention Basin
BiofSw - Biofiltration Swale
BiofSt - Biofiltration Strip
WetBa - Wet Basin
MedFi - Media Filter

* Action needed to protect against potential sensitive species occupation – does not account for any actions required to protect site from herbivory, erosion, or other problems caused by fossorial mammals.

DISTRICT 7 (LOS ANGELES) BMP SITES

605/91 Interchange Biofiltration Swale

No water was present during the August survey. Vegetation around (but not inside) the swale had been recently mowed. The caution tape around the swale was intact at the time of the site visit. No sensitive species were present or expected.

There are no recommendations at this time.

605/91 Interchange Biofiltration Strip

The grass continues to look in good shape. No water was present during this month's monitoring effort. No sensitive species were detected or expected.

No recommendations are required at this time.

605/91 Interchange Infiltration Basin

The caution tape present around the basin was degraded during the August monitoring visit. No sensitive species were detected or expected. No water was present during this month's monitoring effort.

There are no maintenance recommendations at this time.

5/605 Interchange Extended Detention Basin

Vegetation around the basin had been recently mowed and rebar structures had been stored around the basin at the time of the August monitoring visit. No water was present during the survey. No sensitive species were detected or expected.

There are no recommendations at this time.

5/605 Interchange Biofiltration Swale

Caution tape around the basin was degraded during the time of the August monitoring visit. No water was present during the survey. No sensitive species were detected or expected.

There are no recommendations at this time.

Cerritos Maintenance Station/91 Biofiltration Swale

Vegetation had been recently mowed at the time of the August monitoring visit. No water was present during the survey. No sensitive species were detected or expected.

There are no recommendations at this time.

DISTRICT 11 (SAN DIEGO) BMP SITES

5/56 Interchange Extended Detention Basin

No water was present during the survey. No sensitive species were detected or expected.

There are no recommendations at this time.

5/Manchester Avenue Extended Detention Basin

No water was present during the survey. There are no sensitive species issues at this time.

There are no recommendations at this time.

5/La Costa Avenue Wet Basin

Approximately two-thirds to three-quarters of the existing cattails (*Typha* sp.) had been removed prior to the August monitoring visit. Standing water level was approximately the same as the previous monitoring visit. There are no sensitive species issues at this time. Many wetland wildlife species continue to utilize the site.

There are no recommendations at this time.

La Costa Avenue Media Filter

No water was present during the survey. There are no sensitive species issues at this time.

There are no recommendations at this time.

5/La Costa Avenue Infiltration Basin

New vegetative growth is present in the basin. No sensitive species were detected or expected at this time. The net exclusion device was intact.

There are no recommendations at this time.

5/Palomar Airport Road Biofiltration Swale

No water was present during the survey. There were no sensitive species issues.

There are no recommendations at this time.

78/Melrose Drive Biofiltration Swale

No sensitive species were present. No water was present during the survey.

There are no recommendations at this time.

78/15 Extended Detention Basin

No water was present during the survey. No sensitive species were detected.

There are no recommendations at this time.

5/78 Media Filter

There were no issues at the media filter. The net exclusion device present over the north side of the filter was intact at the time of the August monitoring visit.

There are no recommendations.

COMMENTS

During this period, DUDEK conducted a site visit to all BMP's. Water was present at only one of the 15 BMP sites addressed in this report (District 11- La Costa Wet Basin). Photos were taken of each of the BMP sites and are available upon request.

Presently, nesting birds will not constrain maintenance activities, nor will sensitive species.

LITERATURE CITED

Robert Bein, William Frost and Associates. 1999. Project Information for Selected Best Management Practice (BMP) Sites in Caltrans Districts 7 and 11. 27pp.

CALTRANS BMP Retrofit Pilot Program
Districts 7 and 11

BIOLOGICAL MONITORING REPORT
for
September 2000

Prepared for:

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Table 1 presents a synopsis of potential issues related to each BMP site. A discussion of each BMP site follows the table.

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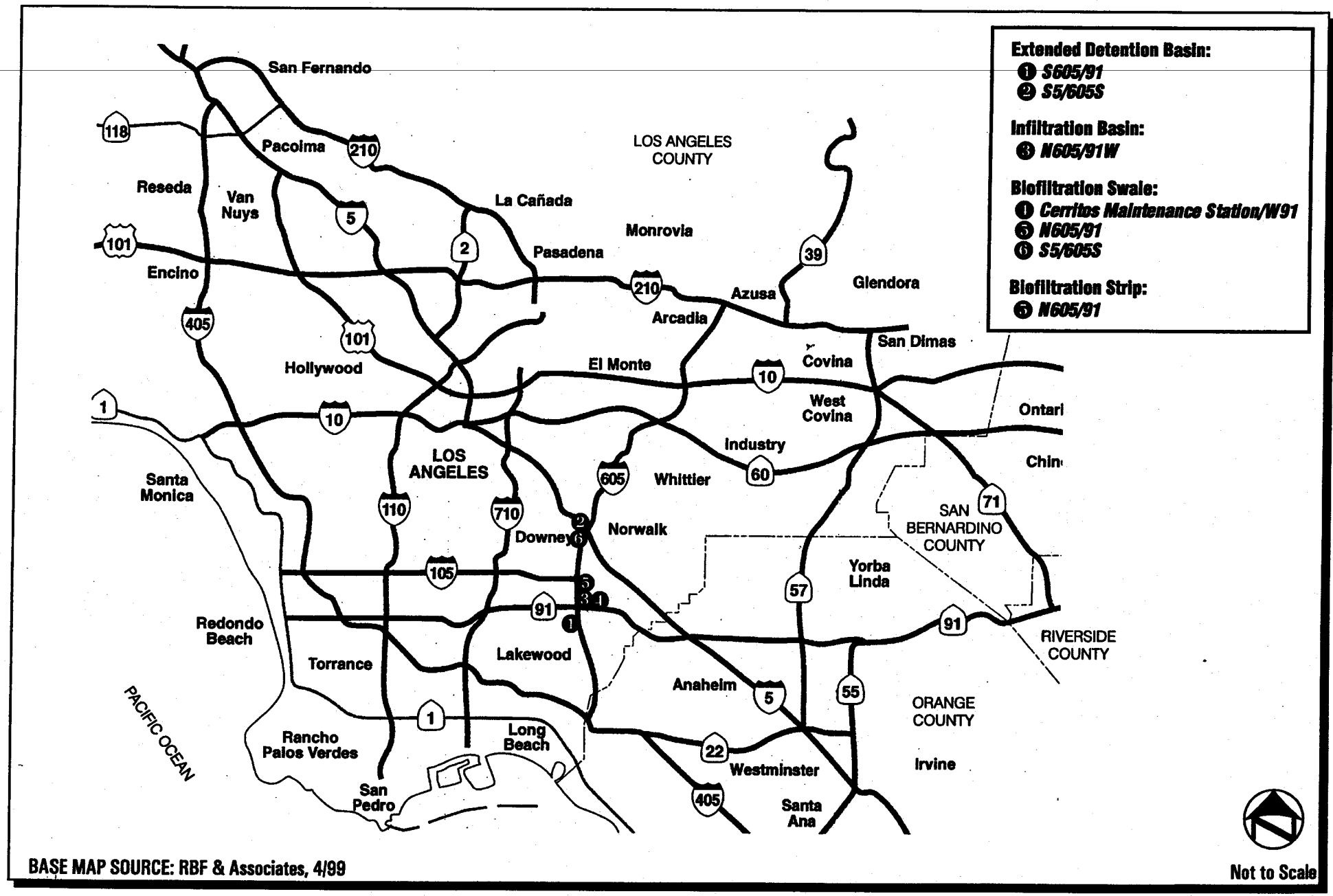
BMP LOCATIONS, TYPE, POTENTIAL BIOLOGICAL ISSUES AND SUMMARY OF FINDINGS

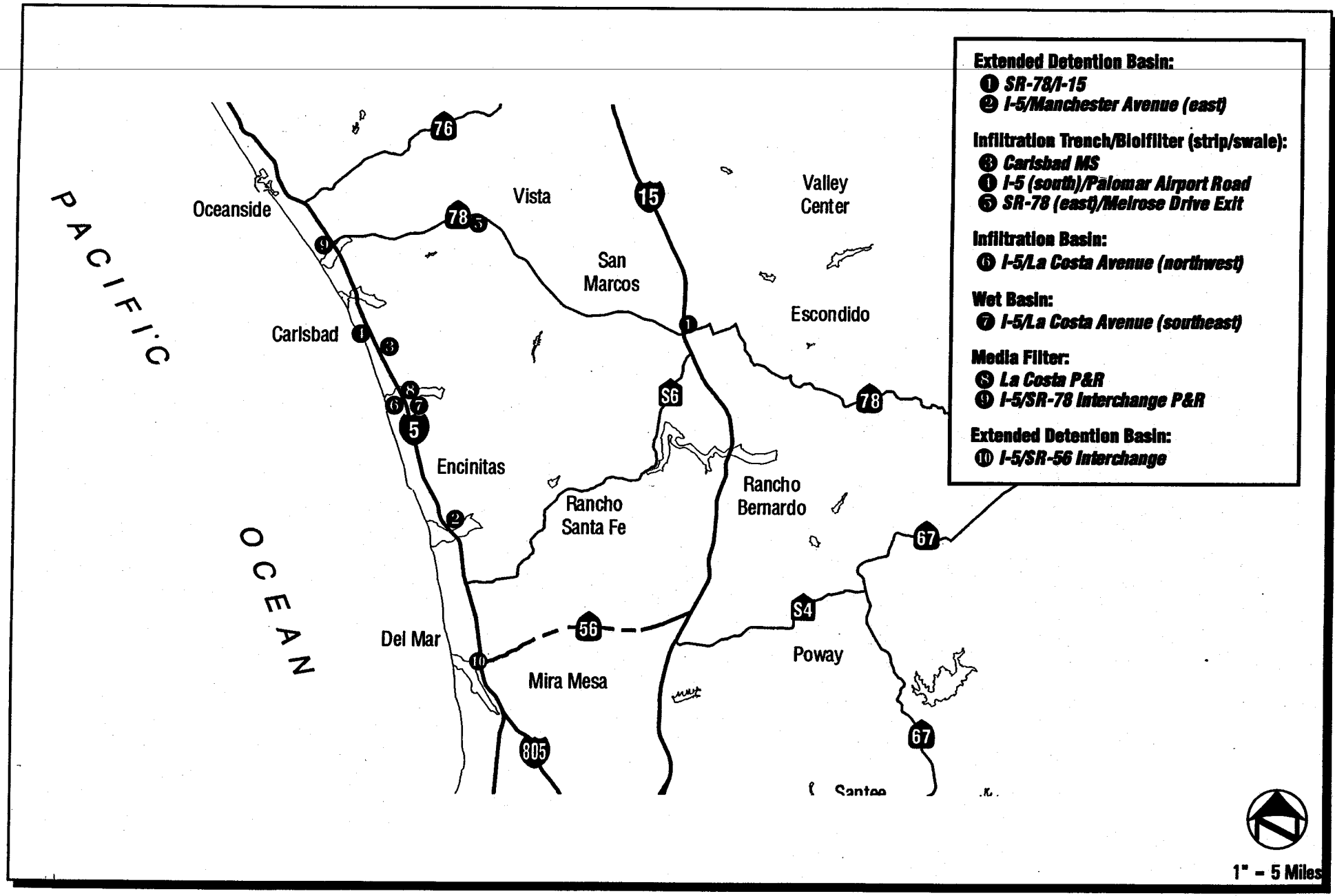
Location; BMP Type	Sensitive Species Activity/Type	Action	Gopher Mounds/ Action*	Ground Squirrel Holes/ Action*	Nesting Birds	Standing Water	Species Observed
I-605/SR-91; InfBa	No	N/A	Yes/None	No	No	No	mourning dove
I-5/I-605; ExtDB	No	N/A	Yes/None	No	No	No	rock dove
I-605/SR-91; BiofSt	No	N/A	Yes/None	No	No	No	none
Cerritos MS; BiofSw	No	N/A	Yes/None	Yes/none	No	No	common raven and west coast lady butterfly
I-5/I605; BiofSw	No	N/A	Yes/None	No	No	No	none
I-605/SR-91; BiofSw	No	N/A	Yes/None	No	No	No	common raven
I-5/Manchester; ExtDB	No	N/A	Yes/None	No	No	No	mourning dove and California towhee
I-5/SR-56; ExtDB	No	N/A	Yes/None	No	No	No	great egret, bushtit, California towhee, black phoebe, and Anna's hummingbird.
I-15/SR-78; ExtDB	No	N/A	Yes/None	Yes/None	No	No	common raven
I-5/La Costa W; InfBa	No	N/A	Yes (around basin but not inside)/None	No	No	No	California towhee
I-5/La Costa SE; WetBa	No	N/A	Yes/None	Yes/None	No	Yes	mallard, California towhee, house finch, lesser goldfinch and song sparrow.



Caltrans BMP Retrofit Pilot Program, LA & SD Counties - Biological Monitoring Report

Regional Location Map - District 7, Los Angeles

FIGURE 1



Caltrans BMP Retrofit Pilot Program, LA & SD Counties - Biological Monitoring Report

Regional Location Map - District 11, San Diego

FIGURE 2

TABLE 1 (*Continued*)
BMP LOCATIONS, TYPE AND POTENTIAL BIOLOGICAL ISSUES

Location; BMP Type	Sensitive Species Activity/Type	Action	Gopher Mounds/ Action*	Ground Squirrel Holes/ Action*	Nesting Birds	Standing Water	Species Observed
SR-78/Melrose; BiofSw	No	N/A	Yes/None	Yes/None	No	No	none
I-5/Palomar Airport; BiofSw	No	N/A	Yes/None	Yes/None	No	No	common raven
I-5/La Costa P&R; MedFi	No	N/A	No	No	No	No	California towhee and common raven
I-5/SR-78 P&R; MedFi	No	N/A	No	No	No	No	common raven and mourning dove

InfBa - Infiltration Basin
ExtDB - Extended Detention Basin
BiofSw - Biofiltration Swale
BiofSt - Biofiltration Strip
WetBa - Wet Basin
MedFi - Media Filter

* Action needed to protect against potential sensitive species occupation – does not account for any actions required to protect site from herbivory, erosion, or other problems caused by fossorial mammals.

DISTRICT 7 (LOS ANGELES) BMP SITES

605/91 Interchange Biofiltration Swale

No water was present during this monitoring period. The caution tape and swale were both intact. No sensitive species were present or expected.

There are no recommendations at this time.

605/91 Interchange Biofiltration Strip

No water was present during this month's monitoring effort. The caution tape around the strip was intact. No sensitive species were detected or expected.

No recommendations are required at this time.

605/91 Interchange Infiltration Basin

No sensitive species were detected or expected. No water was present. The caution tape around the basin was intact.

DISTRICT 11 (SAN DIEGO) BMP SITES

5/56 Interchange Extended Detention Basin

No water was present during the survey. No sensitive species were detected or expected.

There are no recommendations at this time.

5/Manchester Avenue Extended Detention Basin

No water was present during the survey. There are no sensitive species issues at this time.

There are no recommendations at this time.

5/La Costa Avenue Wet Basin

Water was present in the basin and adjacent storm channel. Green algae covered the entire surface of the water in the storm channel and a majority of the water surface in the basin. There are no sensitive species issues at this time.

There are no recommendations at this time.

La Costa Avenue Media Filter

Water stains were present in the basin, however, no standing water was present during the survey. The net previously covering the north side of the structure has been removed.

There are no recommendations at this time.

5/La Costa Avenue Infiltration Basin

No standing water was present at the time of the survey, however, the basin was damp. The net covering the basin was intact. Vegetation within the basin has partially grown back since the previous survey. No sensitive species were detected or expected at this time.

There are no recommendations at this time.

5/Palomar Airport Road Biofiltration Swale

The sky was drizzling during the survey. Water stains were present in the swale, but no standing or flowing water was present. There were no sensitive species issues.

There are no recommendations at this time.

78/Melrose Drive Biofiltration Swale

No sensitive species were present. The swale was damp, but no standing water was present during the survey.

There are no recommendations at this time.

78/15 Extended Detention Basin

The basin contained wet spots, but no standing or flowing water was present during the survey. Vegetation around the basin had been recently mowed. No sensitive species were detected.

There are no recommendations at this time.

5/78 Media Filter

There were no issues at the media filter. The substrate within the filter was wet, however, no standing water was present. The net exclusion device previously present over the north side of the filter has been removed.

There are no recommendations.

COMMENTS

During this period, DUDEK conducted a site visit to all BMP's. Standing water was present at only one of the 15 BMP sites addressed in this report (District 11- La Costa Wet Basin).

Presently, nesting birds will not constrain maintenance activities, nor will sensitive species.

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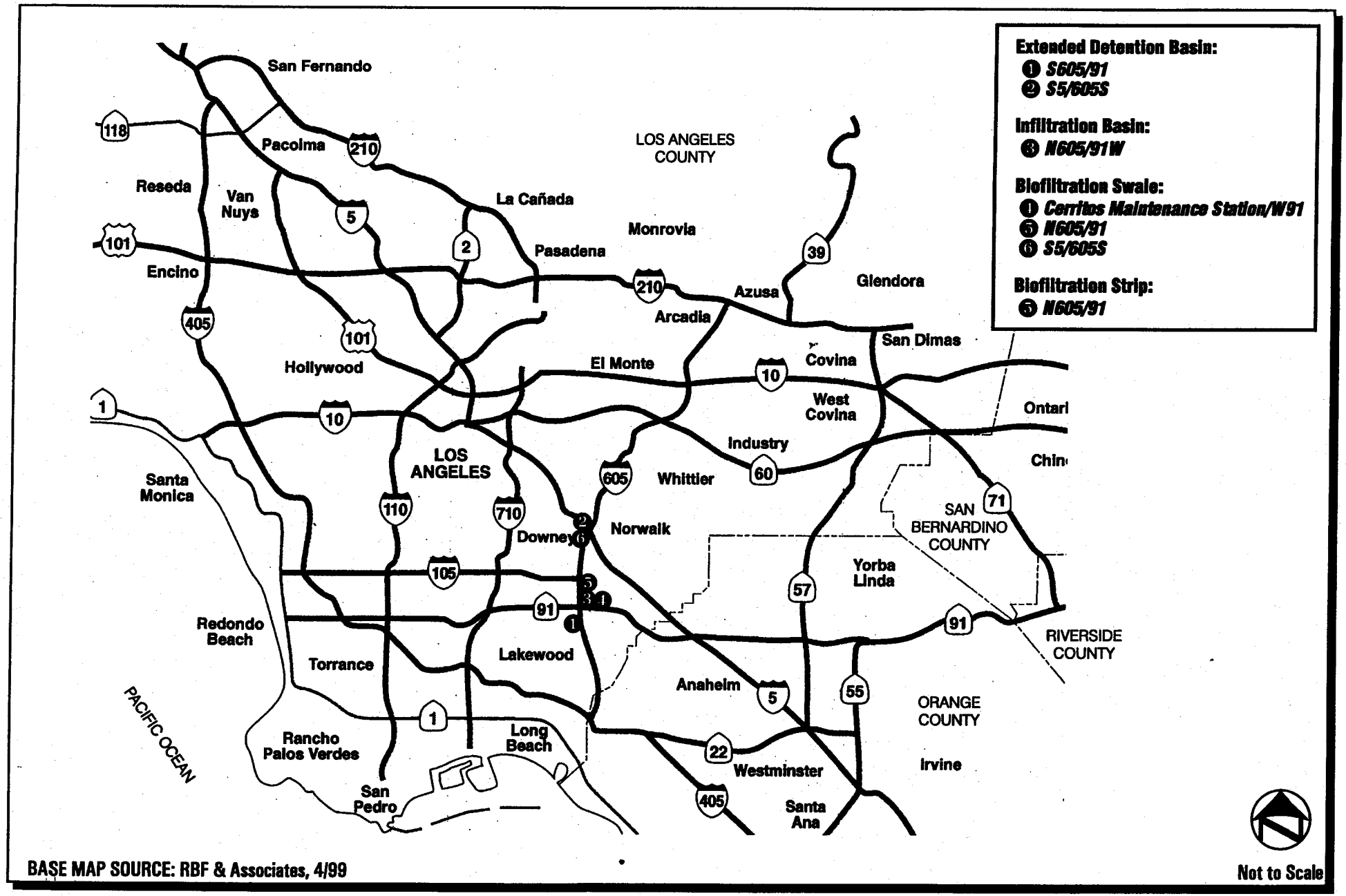
I-5/I-605; ExtDB	No	N/A	Yes/None	No	No	No	common raven and western fence lizard
I-605/SR-91; BiofSt	No	N/A	Yes/None	No	No	No	rock dove
Cerritos MS; BiofSw	No	N/A	Yes/None	Yes/none	No	No	none
I-5/I605; BiofSw	No	N/A	Yes/None	No	No	No	None
I-605/SR-91; BiofSw	No	N/A	Yes/None	No	No	No	mourning dove
I-5/Manchester; ExtDB	No	N/A	Yes/None	No	No	No	California towhee and common raven
I-5/SR-56; ExtDB	No	N/A	Yes/None	No	No	No	California towhee and common raven
I-15/SR-78; ExtDB	No	N/A	Yes/None	Yes/None	No	No	American kestrel
I-5/La Costa W; InfBa	No	N/A	No	No	No	No	bushtit
I-5/La Costa SE; WetBa	No	N/A	Yes/None	Yes/None	No	Yes	mallard, bushtit, California towhee, common yellow-throat, black phoebe, and common raven.

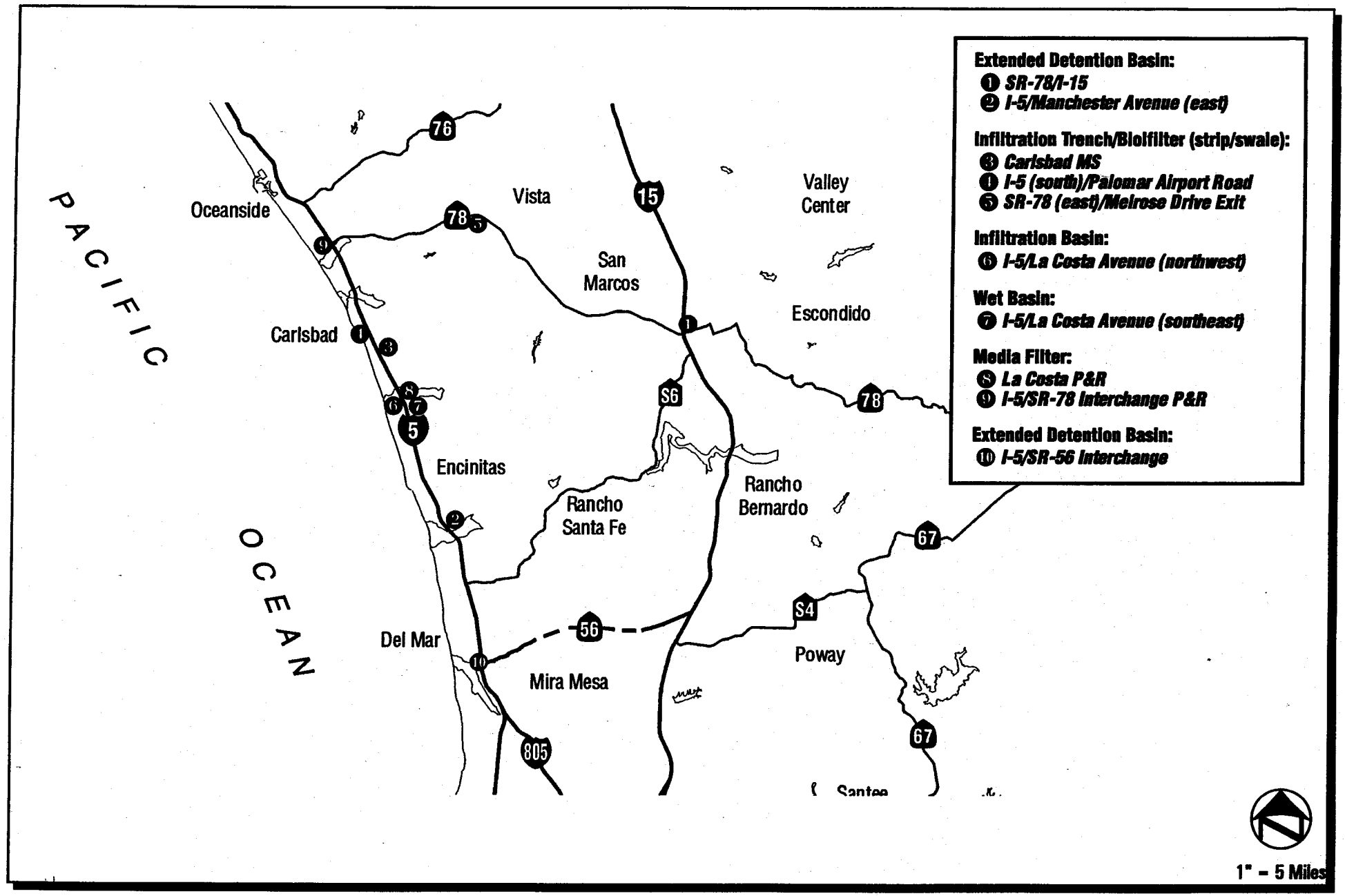


BASE MAP SOURCE: RBF & Associates, 4/99

Caltrans BMP Retrofit Pilot Program, LA & SD Counties - Biological Monitoring Report

Regional Location Map - District 7, Los Angeles

FIGURE 1



Caltrans BMP Retrofit Pilot Program, LA & SD Counties - Biological Monitoring Report

Regional Location Map - District 11, San Diego

FIGURE 2

TABLE 1 (*Continued*)
BMP LOCATIONS, TYPE AND POTENTIAL BIOLOGICAL ISSUES

Location; BMP Type	Sensitive Species Activity/Type	Action	Gopher Mounds/ Action*	Ground Squirrel Holes/ Action*	Nesting Birds	Standing Water	Species Observed
SR-78/Melrose; BiofSw	No	N/A	Yes/None	Yes/None	No	No	common raven, bushtit and house finch.
I-5/Palomar Airport; BiofSw	No	N/A	Yes/None	Yes/None	No	No	northern mockingbird and bushtit
I-5/La Costa P&R; MedFi	No	N/A	No	No	No	No	Anna's hummingbird and bushtit
I-5/SR-78 P&R; MedFi	No	N/A	No	No	No	No	none

InfBa - Infiltration Basin
ExtDB - Extended Detention Basin
BiofSw - Biofiltration Swale
BiofSt - Biofiltration Strip
WetBa - Wet Basin
MedFi - Media Filter

* Action needed to protect against potential sensitive species occupation – does not account for any actions required to protect site from herbivory, erosion, or other problems caused by fossorial mammals.

DISTRICT 7 (LOS ANGELES) BMP SITES

605/91 Interchange Biofiltration Swale

No water was present during this monitoring period. The caution tape around the swale was intact at the time of the site visit. No sensitive species were present or expected.

There are no recommendations at this time.

605/91 Interchange Biofiltration Strip

No water was present during this month's monitoring effort. The caution tape around the strip was intact. No sensitive species were detected or expected.

No recommendations are required at this time.

605/91 Interchange Infiltration Basin

No sensitive species were detected or expected. No water was present during this month's monitoring effort. The caution tape present around the basin has degraded.

There are no maintenance recommendations at this time.

5/605 Interchange Extended Detention Basin

No water was present during the survey. The caution tape around the basin has begun to degrade. No sensitive species were detected or expected.

There are no recommendations at this time.

5/605 Interchange Biofiltration Swale

No water was present during the survey. The caution tape around the swale has begun to degrade. No sensitive species were detected or expected.

There are no recommendations at this time.

Cerritos Maintenance Station/91 Biofiltration Swale

No water was present during the survey. The caution tape around the swale was intact at the time of the survey. No sensitive species were detected or expected.

There are no recommendations at this time.

DISTRICT 11 (SAN DIEGO) BMP SITES

5/56 Interchange Extended Detention Basin

No water was present during the survey. No sensitive species were detected or expected.

There are no recommendations at this time.

5/Manchester Avenue Extended Detention Basin

No water was present during the survey. There are no sensitive species issues at this time.

There are no recommendations at this time.

5/La Costa Avenue Wet Basin

Water was present in both the basin and adjacent storm channel. Approximately 90% of the water surface area was covered with green algae. The cattail (Typha sp.) vegetation is growing back quickly. There are no sensitive species issues at this time.

There are no recommendations at this time.

La Costa Avenue Media Filter

No water was present during the survey. The net previously covering the north side of the filter has been removed.

There are no recommendations at this time.

5/La Costa Avenue Infiltration Basin

Standing water was not present at the time of the survey, although the basin floor was damp from recent rain. No sensitive species were detected or expected at this time. The net exclusion device was intact.

There are no recommendations at this time.

5/Palomar Airport Road Biofiltration Swale

No water was present during the survey. There were no sensitive species issues.

There are no recommendations at this time.

78/Melrose Drive Biofiltration Swale

No sensitive species were present. No water was present during the survey.

There are no recommendations at this time.

78/15 Extended Detention Basin

No water was present during the survey. No sensitive species were detected.

There are no recommendations at this time.

5/78 Media Filter

There were no issues at the media filter. The net exclusion device was not present.

There are no recommendations.

COMMENTS

During this period, DUDEK conducted a site visit to all BMP's. Water was present at only one of the 15 BMP sites addressed in this report (District 11- La Costa Wet Basin). Photos were taken of each of the BMP sites and are available upon request.

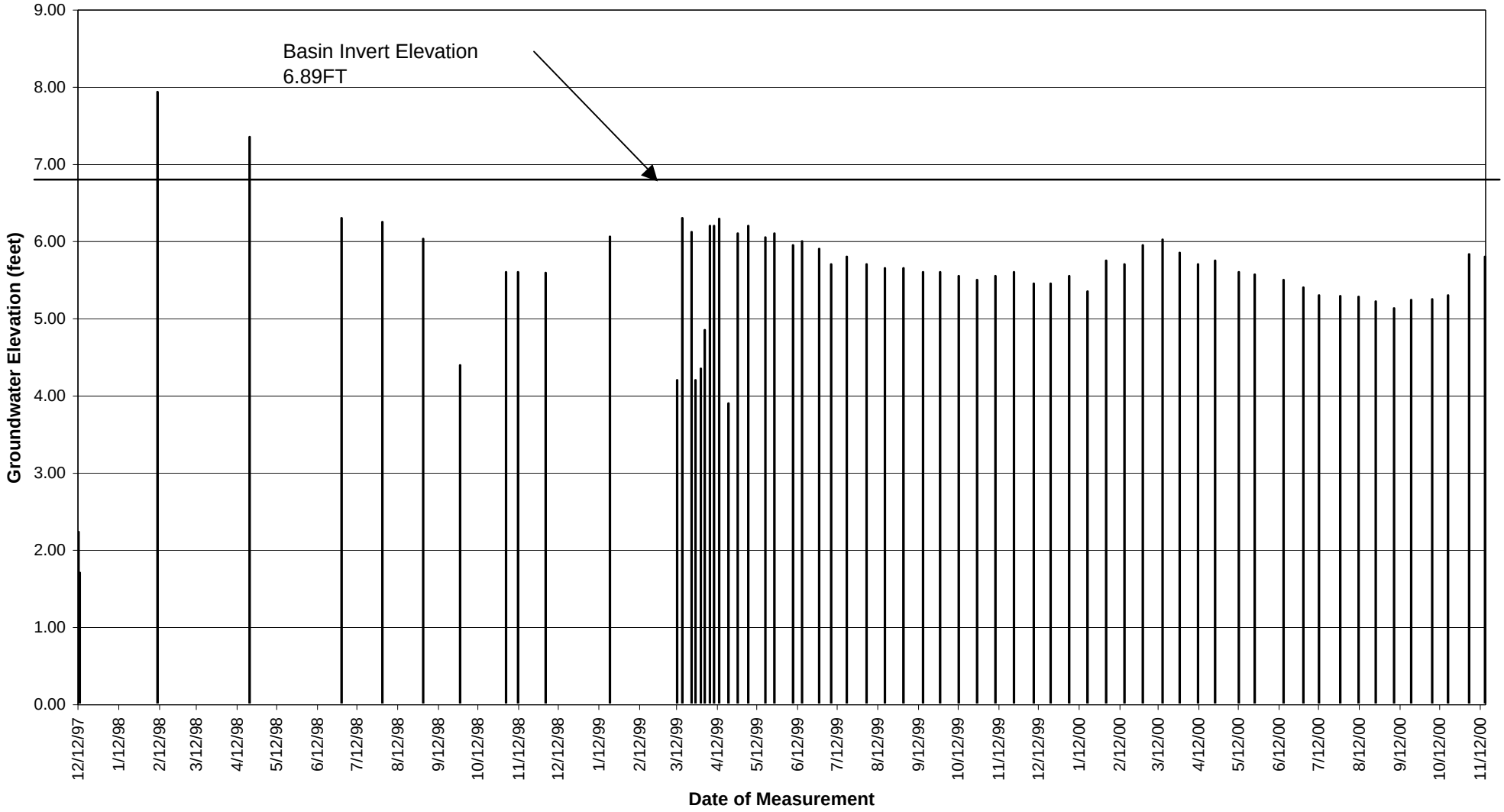
Presently, nesting birds will not constrain maintenance activities, nor will sensitive species.

LITERATURE CITED

Robert Bein, William Frost and Associates. 1999. Project Information for Selected Best Management Practice (BMP) Sites in Caltrans Districts 7 and 11. 27pp.

APPENDIX G: LA COSTA INFILTRATION BASIN LOG

Groundwater Level Monitoring at I-5/La Costa Infiltration Basin Site



BMP RETROFIT PILOT PROGRAM
PS&E LOCATION 3
I-5/LA COSTA AVE INFILTRATION BASIN

TABLE 1
WATER SURFACE ELEVATION SUMMARY SHEET

Date	Time	Field Reading		Pond Depth*	Groundwater Elev (FT)*	Delta	By
		Headwall (FT)	Monitoring Well (FT)	(FT)		(FT)	
12/12/97	---	---	BORING WW-1	---	2.22	4.67	GDC
12/13/97	---	---	BORING WW-2	---	1.69	5.20	GDC
12/23/97	---	---	---	---	No groundwater encountered.	---	GDC
2/10/98	---	---	3.00	---	7.92	-1.03	GDC
4/21/98	---	---	5.85	---	7.34	-0.45	GDC
6/30/98	10:00am	---	6.90	---	6.29	0.60	KLI
7/31/98	4:15pm	---	6.95	---	6.24	0.65	KLI
8/31/98	11:57am	---	7.17	---	6.02	0.87	KLI
9/28/98	---	---	---	---	4.38	---	RBF
11/2/98	4:04pm	---	7.60	---	5.59	1.30	KLI
11/11/98	4:55pm	---	7.60	---	5.59	1.30	KLI
12/2/98	---	---	7.61	---	5.58	1.31	KLI
12/17/98	---	---	---	---	0.00	---	CT RE
1/20/99	7:05am	---	7.14	---	6.05	0.84	GDC
2/24/99	10:15am	2.08	---	---	---	---	GC
3/2/99	2:00pm	1.88	---	---	---	---	AW
3/9/99	11:00am	1.73	---	---	---	---	GC
3/12/99	1:00pm	1.86	9.00	1.45	4.19	2.70	AW
3/16/99	4:55pm	1.98	6.90	1.57	6.29	0.60	AW
3/23/99	10:00am	1.76	7.08	1.35	6.11	0.78	AW
3/26/99	10:20am	2.48	9.00	2.07	4.19	2.70	AW
3/30/99	9:05am	2.28	8.85	1.87	4.34	2.55	AW
4/2/99	8:15am	2.89	8.35	2.48	4.84	2.05	AW
4/6/99	2:00pm	2.69	7.00	2.28	6.19	0.70	AW
4/9/99	10:00am	2.67	7.00	2.26	6.19	0.70	AW
4/13/99	10:00am	2.89	6.91	2.48	6.28	0.61	AW
4/20/99	9:50am	2.52	9.30	2.11	3.89	3.00	AW
4/27/99	2:25pm	2.50	7.10	2.09	6.09	0.80	AW
5/5/99	1:10pm	2.06	7.00	1.65	6.19	0.70	AW
5/18/99	5:55pm	1.66	7.15	1.25	6.04	0.85	AW

BMP RETROFIT PILOT PROGRAM
PS&E LOCATION 3
I-5/LA COSTA AVE INFILTRATION BASIN

TABLE 1
WATER SURFACE ELEVATION SUMMARY SHEET

Date	Time	Field Reading		Pond Depth*	Groundwater Elev (FT)*	Delta	By
		Headwall (FT)	Monitoring Well (FT)	(FT)		(FT)	
5/25/99	5:40pm	1.50	7.10	1.09	6.09	0.80	AW
6/8/99	5:40pm	1.30	7.25	0.89	5.94	0.95	AW
6/15/99	1:45pm	1.10	7.20	0.69	5.99	0.90	AW
6/28/99	1:50pm	0.82	7.30	0.41	5.89	1.00	AW
7/7/99	12:45pm	0.62	7.50	0.21	5.69	1.20	AW
7/19/99	10:30am	0.43	7.40	0.02	5.79	1.10	AW
8/3/99	11:45am	0.22	7.50	-0.19	5.69	1.20	AW
8/17/99	10:50am	0.12	7.55	-0.29	5.64	1.25	AW
8/31/99	9:50am	0.12	7.55	-0.29	5.64	1.25	AW
9/15/99	11:45am	-0.26	7.60	-0.67	5.59	1.30	AW
9/28/99	11:55am	0.08	7.60	-0.33	5.59	1.30	AW
10/12/99	10:05am	0.08	7.65	-0.33	5.54	1.35	AW
10/26/99	3:00pm	0.08	7.70	-0.33	5.49	1.40	AW
11/9/99	2:35pm	0.08	7.65	-0.33	5.54	1.35	AW
11/23/99	4:05pm	No standing water.	7.60	No standing water.	5.59	1.30	FP
12/8/99	10:15am	No standing water.	7.75	No standing water.	5.44	1.45	AW
12/21/99	3:30pm	No standing water.	7.75	No standing water.	5.44	1.45	AW
1/4/00	12:20pm	No standing water.	7.65	No standing water.	5.54	1.35	AW

BMP RETROFIT PILOT PROGRAM
PS&E LOCATION 3
I-5/LA COSTA AVE INFILTRATION BASIN

TABLE 1
WATER SURFACE ELEVATION SUMMARY SHEET

Date	Time	Field Reading		Pond Depth*	Groundwater Elev (FT)*	Delta	By
		Headwall (FT)	Monitoring Well (FT)	(FT)		(FT)	
1/18/00	8:50am	No standing water.	7.85	No standing water.	5.34	1.55	AW
2/1/00	10:15am	Small Pools.	7.45	No standing water.	5.74	1.15	CW
2/15/00	4:45pm	1.60	7.50	1.19	5.69	1.20	MZ
2/29/00	12:30pm	2.90	7.25	2.49	5.94	0.95	MZ
3/15/00	2:30pm	2.90	7.18	2.49	6.01	0.88	CW
3/28/00	11:15am	1.51	7.35	1.10	5.84	1.05	CW
4/11/00	10:00am	1.20	7.50	0.79	5.69	1.20	BJ
4/24/00	9:30am	1.60	7.45	1.19	5.74	1.15	MZ
5/12/00	10:00am	0.78	7.60	0.37	5.59	1.30	CW
5/24/00	2:10pm	0.59	7.63	0.18	5.56	1.33	MZ
6/15/00	11:30am	0.47	7.70	0.06	5.49	1.40	BJ
6/30/00	10:30am	No standing water.	7.80	No standing water.	5.39	1.50	BJ
7/12/00	11:30am	No standing water.	7.90	No standing water.	5.29	1.60	CW
7/28/00	12:10am	No standing water.	7.91	No standing water.	5.28	1.61	VG
8/11/00	1:00pm	No standing water.	7.92	No standing water.	5.27	1.62	CW
8/24/00	9:45am	No standing water.	7.98	No standing water.	5.21	1.68	VG
9/7/00	11:15am	No standing water.	8.07	No standing water.	5.12	1.77	CW
9/20/00	10:00am	No standing water.	7.96	No standing water.	5.23	1.66	BB
10/6/00	11:00 AM	No standing water.	7.95	No standing water.	5.24	1.65	CW
10/18/00	11:45 AM	No standing water.	7.9	No standing water.	5.29	1.60	BJ
11/3/00	3:00 PM	2.60	7.37	2.19	5.82	1.07	VG

BMP RETROFIT PILOT PROGRAM
PS&E LOCATION 3
I-5/LA COSTA AVE INFILTRATION BASIN

TABLE 1
WATER SURFACE ELEVATION SUMMARY SHEET

Date	Time	Field Reading		Pond Depth*	Groundwater Elev (FT)*	Delta	By
		Headwall (FT)	Monitoring Well (FT)	(FT)		(FT)	
11/15/00	12:00 PM	2.10	7.4	1.69	5.79	1.10	VG

*

Temporary Well: Well Cover elevation 10.99 ft (3.35m). Well rim elevation 10.92 ft.

WSE at monitoring well = Well cover elevation (FT) - Monitoring Well Reading (FT)

*

Permanent Well: Monitoring well notch at elevation 13.186 ft (4.02m)

WSE at monitoring well = Notch elevation (FT) - Monitoring Well Reading (FT)
Monitoring Well reading = Distance to groundwater surface

*

Pond Depth = Headwall Field Reading (FT) - Pipe Invert Location on the Headwall Gauge (FT)

Pipe Invert Location on the Headwall Gauge (FT) = 0.41 ft
Note: Negative Pond Depths indicate ponded water is below invert.
This is due to scour and settlement of the invert material.

Delta = Basin Invert - Groundwater elevation
Basin Invert = 6.89 FT (2.1m)

AW- RBF
FP- RBF
GC- RBF
GDC-Group Delta Consultants (Formerly LKR- The LKR Group, Consulting Geotechnical Engineers)
KLI- Kinnetic Laboratories, Inc.
CT RE- Caltrans Resident Engineer

APPENDIX H: PROJECT CALENDAR

August 2000

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Jul 2000 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31		1	2	3	4	5
6	7	8 Biweekly Report Due	9	10 10 AM-Biweekly Conference Call-Rich Horner, Chris May, Rick Graff, Jeremy Johnstone, Bob Wu, Pete	11	12
13	14	15	16	17	18	19
20	21	22 Biweekly Agenda Due	23	24 10 AM-Biweekly Conference Call-Rich Horner, Chris May, Rick Graff, Jeremy Johnstone, Bob Wu, Pete	25	26
27	28	29	30	31	Sep 2000 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	

August

8	Biweekly Report Due
10	10 AM-Biweekly Conference Call-Rich Horner, Chris May, Rick Graff, Jeremy Johnstone, Bob Wu, Pete Van Riper, Steve Borroum, Brian Currier, Cid Tesoro, Syra Ramos, RBF, BC, KLI, MWC, Law Crandall, Dudek.
22	Biweekly Agenda Due
24	10 AM-Biweekly Conference Call-Rich Horner, Chris May, Rick Graff, Jeremy Johnstone, Bob Wu, Pete Van Riper, Steve Borroum, Brian Currier, Cid Tesoro, Syra Ramos, RBF, BC, KLI, MWC, Law Crandall, Dudek.

September 2000

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Aug 2000 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Oct 2000 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31			1	2
3	4 HOLIDAY	5	6 Quarterly Report Due	7	8	9
10	11	12	13	14	15	16
17	18	19	20 9:30 AM2:30 PM-Quarterly Meeting at RBF, Irvine Office. Participants-NRDC EPA, Baykeepers, Consultants, Caltrans.	21 BMP Workshop 8:30 to 4:30-Stormwa Quality Workshop-LA	22	23
24	25	26	27	28	29	30

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September

4	HOLIDAY
6	Quarterly Report Due
20	9:30 AM2:30 PM-Quarterly Meeting at RBF, Irvine Office. Participants-NRDC, EPA, Baykeepers, Consultants, Caltrans.
21	BMP Workshop
	8:30 to 4:30-Stormwater Quality Workshop-LA Convention Center

October 2000

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5 Biweekly Conference Call	6	7
8	9	10	11	12	13	14
15	16	17	18	19 Biweekly Conference Call	20	21
22	23	24	25	26	27 Third Party Cost Meeting at Homes Narver. 10:30 to 3:30.	28
29	30	31 Biweekly Report Due				

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October

5	Biweekly Conference Call
19	Biweekly Conference Call
27	Third Party Cost Meeting at Homes Narver. 10:30 to 3:30.
31	Biweekly Report Due

November 2000

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2 Biweekly Conference Call	3	4
5	6	7	8	9	10	11
12	13	14 Biweekly Report Due	15	16 Biweekly Conference Call	17	18
19	20	21	22	23 No Monitoring/Sa	24	25
26	27	28	29	30 Quarterly Status 11 Report Due		

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November

2	Biweekly Conference Call
14	Biweekly Report Due
16	Biweekly Conference Call
23	No Monitoring/Sampling
30	Quarterly Status 11 Report Due

December 2000

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
10	11	12	13 D7 Studies Meeting at RBF 9 am Sweeper Meeting at RBF 1-3 pm Final Report Meeting at RBF 3-pm	14 9:30 AM2:30 PM-Quarterly Meeting No. 11 at RBF, Irvine Office. Participants-N EPA, Baykeepers, Consultants,	15	16
17	18	19	20	21	22	23
24 No Monitoring/	25 No Monitoring/Sampling	26 Biweekly Report Due	27	28 Bi-Weekly Conference Call	29	30
31 No Monitoring/						

Printed by RBF on 12/1/2000

December

13	D7 Studies Meeting at RBF 9 am
	Sweeper Meeting at RBF 1-3 pm
	Final Report Meeting at RBF 3-5 pm
14	9:30 AM2:30 PM-Quarterly Meeting No. 11 at RBF, Irvine Office. Participants-NRDC, EPA, Baykeepers, Consultants, Caltrans.
24	No Monitoring/Sampling
25	No Monitoring/Sampling
26	Biweekly Report Due
28	Bi-Weekly Conference Call
31	No Monitoring/Sampling

January 2001

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 No Sampling	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Printed by RBF on 12/1/2000

January

1 No Sampling